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WAR SURGERY OF THE ABDOMEN*

BY

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In this paper it will be my part to discuss only some of the general principles as they may be applied to the various conditions of warfare.

It is often forgotten that abdominal surgery is of quite recent date, a very large number of the big operations which are seen every day in civilian surgery dating only back to 1880; but so rapid were its strides that in about ten years the customary treatment for all perforating wounds was by open operation. During the Boer War, however, it was advocated by many that the patients should be kept absolutely at rest, with morphine and only small sips of water by mouth. Many cases treated in this way recovered, but it must be remembered that in that campaign the greater number of the injuries were due to rifle-bullet wounds, the rifles having been fired from a considerable distance, so that most of the wounds were clean penetrations; and much stress was laid upon the fact that in such wounds perforations of the intestine and stomach tended to close and to be occluded by protruding mucosa. In the war of 1914-18 an attempt was made in the early stages to pursue a similar line of treatment, with much less satisfactory results, and the monumental work of Sir Cuthbert Wallace with its large collection of statistics showed that in that war, at any rate, the only satisfactory treatment was by open operation. The nature of most of the wounds had changed considerably; a large proportion of them were due to fragments of high-explosive shell and shrapnel bullets, which were round leaden bullets packed into a high-explosive shell. This form of missile is now rarely used, and what is often loosely called a shrapnel wound is really an injury due to a fragment of a high-explosive shell or bomb.

In this war the explosives are of much higher power, and the fragments of shell or bomb are thrown out with greater force. In the close vicinity of the explosion their velocity may be higher than that of a rifle-bullet. They are ragged and irregular, so that not only is their tearing force enormous but they are very prone to carry in with them portions of septic clothing and other foreign material. The fact which has impressed itself upon me most in this war is that wounds from high-explosive fragments do much greater damage to the deep tissues than would be suspected from the surface appearances. In the beginning of the war there was a tendency to treat apparently small perforating wounds with an antiseptic dressing, but time after time I have been struck with the wide extent of laceration of the underlying tissues when there was a skin wound perhaps only a quarter of an inch in diameter, and I have now come to regard it as a constant rule that any penetrating wound, in any part of the body, due to a piece of high explosive must be opened and explored. This is in the main true of abdominal wounds, where the laceration of the abdominal wall may be accompanied by injury of the underlying viscera. I have vividly in my mind one case in which a small fragment entered the buttock and, lying in front of the sacrum, had torn a large lateral opening into the rectum. Many of the cases of rifle- and revolver-bullet wounds have been of the same disruptive nature. This may be due to the fact that in the present more mobile war the wounds are inflicted for the most part at shorter range before the bullet has steadied on its course, or it may be due to the use of a more powerful explosive. In one of my cases, of a revolver-bullet wound inflicted at close range, four inches of the colon was destroyed entirely except for a narrow strip of the longitudinal muscle, the greater curve of the stomach was cut across giving a wound two inches long, and the left renal artery was completely divided.

The Power of Adaptability

The most valuable asset a medical man can possess in time of war is the power of adaptability. In peacetime you will be operating in a modern theatre with the help of a skilled anaesthetist and assistant and with instruments and equipment of the most modern design. It may well happen in war that you may find yourself confronted with a wound of the abdomen when you have little or no equipment. I was told a few days ago by a man now high up in the Army Medical Services that at one time he was in the African desert and had to treat a man who had a stab wound of the abdomen through which the colon was prolapsed. He pushed back the colon, sutured the skin, gave the man morphine, and sent him back to the base, where he was treated and ultimately recovered. Some of you may be now or may become regimental medical officers and may be faced with similar situations. There is no doubt, as Trueta found in the Spanish War, that the ideal procedure with all serious cases is to get them sent to hospital at the earliest opportunity, and, generally speaking, the correct treatment is to apply a first-aid dressing, administer morphine, and send the man back to the base. The fewer times the wound is inspected and dressed the better. A good deal of harm has happened to many civilian raid casualties, owing to the fact that they have been taken to first-aid centres, time has been wasted in applying first-aid treatment, and only later are they sent to hospital. The ambulance orderlies now have instructions to take all serious cases direct to hospital, but with the difficulties associated with the rescue of casualties from a bombed house, and working in a complete black-out, it is often almost impossible to determine the nature of a patient's injury. In these days of rapid advance it may well happen that the evacuation of an abdominal wound case may be prolonged and difficult, and the regimental medical officer must then exercise his ingenuity as to the best form of treatment. If he is so placed that he has at his command a small theatre with an anaesthetist but very little equipment he will, if he is adaptable, remember that much can

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be done with very little. Most intestinal injuries are best repaired with the use of clamps, but a suture or resection can easily be performed without them. There are very few abdominal operations that at a pinch cannot be performed with a scalpel, a pair of scissors, a pair of dissecting forceps, and half a dozen Spencer Wells forceps. Nor should he be deterred if he finds that he has run out of catgut and silk. Intestine can be readily sutured with an ordinary sewing needle and a boiled reel of cotton. The cotton may later give trouble; but the chance of this is small, and the trouble can be rectified later in a well-equipped hospital. Meanwhile the man's life has been saved. This is perhaps the main difference between civilian and war surgery of the abdomen. The chief consideration is to save the man's life, and methods to obtain this end which will probably lead to subsequent trouble may of necessity have to be adopted.

Resuscitation Treatment

If a surgeon be working in a well-equipped hospital severe abdominal wounds may present themselves under several conditions. In many cases the lesions are associated with profound shock. In the early days of this war the general procedure was to operate upon all severe cases at the earliest opportunity. As the lay papers are so fond of describing it, the patient was rushed to the theatre and operated on at once; but further experience has shown that very few cases are not benefited by a certain amount of treatment in a resuscitation ward. Some surgeons maintain that abdominal wounds are an exception because they are nearly always associated with haemorrhage, but I do not agree that they are exceptions to the general principle. Haemorrhage is as a rule much reduced in the stage of severe shock, and even if present can usually be distinguished from shock. It is true that many cases of severe shock fail to react to transfusion with plasma or saline or to the administration of oxygen. In the early days, when blood transfusion was given to all and sundry, there is no doubt that it was the direct cause of bad results, but even with only plasma transfusions the cases seem to be sharply divided into two groups—those that react and generally do well, and those that steadily and rapidly go down in spite of all our efforts. So marked is this that I am rather leaning to the view that the only forms of resuscitation that should be used are warmth and morphine. In severe wounds in other parts of the body warm sweet drinks or rectal infusions should be added; but with an abdominal wound, where there may be an injury of the stomach or rectum, these may not be possible, and an intravenous transfusion may become essential. My own view, therefore, is that in the case of an abdominal wound a patient with severe shock should have a short period of resuscitation. If there is evidence of haemorrhage he should be operated on at once. If improvement follows he should be operated upon as soon as his condition will stand it. If he rapidly goes downhill it is almost certain that he would not have been improved by operation, but would have died on the table.

Haemorrhage

Haemorrhage, which so often occurs with abdominal injuries, may come from many sources, but in my experience more commonly from an injury of a solid viscus—liver, spleen, or kidney. Not infrequently a large artery is found cut across, but the proximal end has retracted and curled up and very little bleeding has taken place. This may give rise to difficulty at operation, for the divided artery may escape notice and remain as a potential source of later haemorrhage. Partly divided arteries will of course not retract, and will continue to bleed. Severe lacerations of the solid viscera always give rise to profound haemorrhage, and the same is true of clean incised wounds such as may result from a bayonet thrust. The diagnosis of intra-abdominal haemorrhage from shock is not always easy, but the haemorrhage will rarely cause severe symptoms so early unless it is so extensive that it is likely to be fatal whatever measures are taken. Shock comes on at once and, if progressive in spite of treatment, usually destroys the patient within two hours. Haemorrhage if curable does not give severe symptoms for an hour or more, and causes the characteristic white anaemia, very different from the mild cyanotic appearance of shock, and a blood examination would not show the haemoglobin concentration so characteristic of shock. Naturally, even if the patient's condition is deteriorating from haemorrhage, an operation should be undertaken so long as there is the slightest chance that he will be able to survive it, for it gives him his sole possibility of recovery.

A complication which fortunately so far has only been theoretical is the possibility that a patient has an abdominal wound and at the same time mustard-gas burns. If taken direct to the theatre an operation would be almost impossible owing to the risk of contaminating those working there, and he would therefore have to be decontaminated beforehand, but it is doubtful if many cases would stand such treatment.

The Case for Early Operation

In uncomplicated cases there can be no question that an operation should be undertaken at the earliest opportunity; but to-day this is true of all severe lacerations, to which category most war wounds belong. The most remarkable change that has happened in the results of the treatment of such in recent years has been the almost complete control of sepsis if they can be dealt with in the early stages. This is undoubtedly chiefly due to the cleaning of the wound and the excision of all lacerated tissues; it may be aided by the use of antiseptics, powdering the wound with sulphanilamide, and putting the limb at rest. How much is due to each factor it is impossible to say, for it is not justifiable to carry out control experiments. If a surgeon uses a method which gives a very high percentage of successful results he must stick to it even if he does perform some unnecessary steps. The difference between the universal and profound sepsis of the wounds of the last war and the almost constant primary union or clean granulation of the wounds mainly seen in this war is very striking. This was of course not true of the patients wounded at Dunkirk, for immediate treatment could not be given there, and it may well happen that with future engagements similar conditions may arise and patients only be brought for treatment several days after infliction of their injuries. The case for immediate operation is even stronger with abdominal wounds, where the danger of infection from wounds of the intestinal tract is added to the risk of infection from without.

My opinion may differ considerably from that of most surgeons, but I have been very unhappy with the use of local and intravenous anaesthetics. I am still a firm believer in the use of ether, and—dare I say it?—ether given on an open mask. With the modern apparatus the whole responsibility is thrown on the machine, and in my experience no machine can take the place of human skill.

Technical Outlines of Operation

Having decided that the ideal treatment of all abdominal wounds is early operation it is necessary to consider briefly the technical outlines to be employed. It may again be stressed that these are all ill persons and the operation is

to be performed as a life-saving measure ; therefore if there is a choice of two methods the one to be chosen should be the shortest and least disturbing to the patient. If there is only a wound of entry an *x*-ray plate should be taken before operation. This occupies only a few minutes and may be of great help in locating the missile and in tracing its passage.

The wound of entry should be excised. If small and it is uncertain whether the peritoneum has been entered, the skin should be sterilized and an ellipse made around the wound. If near the midline, the long axis of the ellipse should be vertical, so that the resulting opening into the abdomen will be para- or trans-rectal. If farther out it should lie in the line of the external oblique muscles. If the wound is large and gaping, with prolapsed intestine, this should be cleaned with saline, replaced if not perforated or drawn aside if perforated, and the whole of the edges of the skin excised. Layer by layer, subcutaneous tissue, aponeurosis, muscle, and if necessary peritoneum, are exposed and all lacerated tissue carefully excised. By this means, if there be doubt concerning penetration of the abdominal wall, it is solved as the wound is explored. If the peritoneum is not perforated the wound should be sutured unless there be evidence of injury to a hollow viscus as shown by rigidity and lack of respiratory movements, or of haemorrhage into the peritoneum. It is not wise to open the peritoneum as a routine, for there is risk of infection. By carrying out this treatment of the abdominal wall layer by layer, not only is there a greater chance of removing all dead and infected tissue but the layers are all exposed, so that at the end of the operation the wound can be rapidly closed.

When the peritoneum has been opened a rapid survey must be made. There may be abnormal contents within the cavity—gastric contents, brown fluid from the small intestine, faecal material from the colon, urine from the bladder, or blood from a solid viscus or large artery ; but there is here the same danger that occurs in civilian surgery —that the surgeon, having found one lesion, so concentrates his attention upon it that another lesion may be entirely overlooked. In war wounds of the abdomen multiple lesions are so common that they are almost the rule. Therefore before any repair is begun a rapid survey must be made of the whole field, attention being especially directed along the course of the missile as shown by the wounds of entry and exit or by the position of the foreign body as shown on the radiograph. It is in this preliminary survey that experience counts so much : long practice within the abdomen enables the surgeon to inspect all viscera in a few minutes and saves the patient a great deal ; for it is handling and exposure of the viscera which not only increase shock but tend to produce post-operative ileus. A recognition of all the lesions will also enable the surgeon to direct his attention first to that which is the more serious. Of the treatment of the individual lesions more will be discussed under the separate headings. It is sufficient to say that openings into the stomach and small intestines must be closed. Sometimes this is more rapidly, neatly, and safely performed by first excising ragged and torn edges of the wound. In the small intestine the wounds should be sutured transversely to the long axis of the gut. If there are several perforations in close proximity it may be quicker and safer to excise a portion of the intestine. Whether continuity be established by closure of the ends and lateral anastomoses or by end-to-end suture is a matter which each surgeon must decide himself. He should use that which he feels is the quicker in his own hands ; my own choice is generally end-to-end union. A laceration of the liver in my experience can always be sutured and haemorrhage controlled by closing with mattress sutures of thick catgut, and the use of omental pads or grafts is never required. A tear of the spleen, on the other hand, nearly always needs splenectony. A lacerated kidney sometimes can be saved, at other times has to be removed ; generally speaking, the nearer the wound is to the pelvis the more likely is nephrectomy to be required. Lesions of the colon should always be sutured if possible, but in very ill patients it may be wiser to perform a colostomy. The bladder may sometimes be sutured, but is often best treated by suprapubic drainage. If a large artery has been divided the proximal end must, of course, always be ligatured, but it is also essential to determine whether the area supplied is still viable : division of a mesenteric artery, for instance, may require a resection of the gut.

Having repaired the visceral lesion, attention must now be given to the peritoneal cavity. As is well known, leakage from the stomach does not as a rule require any attempts to remove all the stomach contents from the peritoneum, and the attempts made by surgeons some years ago to wash out the peritoneum or to remove the contents with sponges only led to wide diffusion and increased the risk of infection. The same is true of the contents of the intestine and bladder, but if there has been escape of semi-solid faecal content from the colon it may be gently swabbed away. Such leakage is rare, for when severely injured the colon is paralysed and all peristalsis ceases. In all cases of contamination of the peritoneum the patient should be nursed in the Fowler position, and personally I much prefer to drain nearly all cases with a suprapubic tube passing to the bottom of the recto-vesical pouch. Many surgeons dispense with this, but I have never known trouble to arise from the presence of a tube, though not uncommonly difficulty has arisen because one has not been inserted.' There is a curious belief that a tube inserted into the pelvis may cause adhesions which may give rise to intestinal obstruction on or about the tenth day. My experience has been the very reverse : nearly every case of this sort that I have operated upon has shown that the adhesions are formed round a localized abscess, and in all either no tube had been inserted or one had been removed too soon. Such a tube should be twisted with forceps each day and more or less allowed to push its way out unless there is no sign of infection, when it may be removed. My old teacher, the late H. Barnard, had a famous saying that " the cause of persistent adhesions is the persistence of the cause of the adhesions " : in these cases the cause is the abscess, and if it is drained it cannot persist.

Nowadays very few advocate the use of intraperitoneal antiseptics, although sulphanilamide employed in this way is beginning to have its advocates. I have no experience of it, but should be very chary to use it. In the last war many surgeons washed out the peritoneum with ether and other fluids, but this practice has wisely fallen into abeyance.

The intra-abdominal lesion having been treated, attention must be given to the abdominal wall. In the excision of the lacerated tissues the different layers will have been defined and separated ; therefore suture in layers should occupy only a short time, and if the patient can stand this I am sure it should be done. Now and again a patient may be so ill that the wall must be drawn together with a few through-and-through sutures. I am confident that this is more likely to give rise to a ventral hernia, but the primary aim must be always to save the life of a desperately ill patient and the risk may have to be taken. By far the greater number of ventral post-operative herniae are due to the failure to obtain good apposition of the edges of the peritoneum. If the stitches cut out or for some other reason a small gap is left, a piece of omentum is sure to

insinuate itself and a hernial opening is formed; for this reason it has for years been my custom to suture this layer with a running mattress suture which grips the fibres and is therefore much less likely to cut out. The next question that arises is, Should any antiseptic be used in the wound? It is my own custom, after the peritoneum has been sutured and, with all wounds of the limbs, after the lacerated tissues have been excised, to wash out the wound with tincture of iodine, then with surgical spirit to dry it, and dust with powdered sulphanilamide. I have a suspicion that if the surgical cleansing has been thorough these steps are all unnecessary, but the results have been so good that I dare not experiment by cutting out any one of them.

After-treatment

Of the after-treatment but little need be said. All these war wounds are associated with shock, which is prone to be increased by the operation. The essential thing is to give the patient rest and sleep, and there can be no doubt that the most valuable drug we possess for this purpose is morphine. It should be given freely. So long as the patient is restless there is very little risk of giving too much, but as a precaution the respirations should be counted. There is still in some quarters a curious belief that it may give rise to ileus. On the contrary, the best form of treatment for threatening ileus is the administration of morphine. Many will not believe this, although they teach regularly that morphine should not be given in acute intestinal obstruction as it masks all the symptoms. That the patients should be kept warm is of course generally accepted. I am, however, not happy about the modern fashion of administering fluid. I have for years held, and it is now being accepted, that blood should only be given in cases of haemorrhage, when its use is invaluable. Of the value of plasma I am not altogether convinced, and I share with many others the view that intravenous saline should only rarely be given. If fluid is required it should, if possible, be administered as sweet drinks by mouth; but if there is vomiting or there has been a wound of the stomach it should be given by rectum, when it should contain glucose. There is a strange custom of giving the fluid by rectum as saline—I suppose by analogy with intravenous fluid. If one were thirsty one would not drink saline but water, and by the rectum simple tap-water is more rapidly absorbed. If there has been much loss of salts, as by frequent vomiting, then saline may replace the tap-water. Before the war I was often called in to see desperately ill patients after a severe abdominal operation, to find an indwelling tube in the stomach or duodenum, a needle in the subcutaneous tissues or in a vein, or in both, through which fluid was being administered, and often a tube up the rectum. The patient was in a state of profound misery and unable to sleep. The suggestion that the tubes be at once removed, that morphine be given freely, that the stomach if dilated be washed out morning and evening, and that one pint of fluid be given if necessary by rectum night and morning, afforded the patient comfort, allowed him to sleep, and was often followed by recovery.

Once the shock has been overcome the patient should be placed in the Fowler position. Not only is this a safeguard where there is any possibility of peritoneal infection, but I think that deep respirations are easier and the chance of lung complications, which are the greatest cause of anxiety after modern abdominal operations, is lessened. The position should be maintained by some support, such as a board or an anchored pillow, against which the feet can press, but a knee pillow should never be allowed. It hinders all movements of the legs and consequently their circulation, and presses upon the popliteal veins. I believe it to be one of the commonest predisposing causes of thrombosis.

How seldom is the value of rest recognized! Just as it is essential for the patient generally, so it is essential to his intestinal tract; but the commonest fault to-day is the attempt to obtain an early action of the bowels. If there is slight distension or discomfort within the abdomen, aperients, enemata, pituitrin, eserine, or hormonal are immediately given. It is forgotten that the gut is partly paralysed from the injury and the handling it has of necessity received even in the most gentle of operations. If it is stimulated while in this condition the paralysis will become complete. The only chance of recovery lies in complete rest, and this can only be gained by the use of morphine. No attempt whatever should be made to obtain an action of the bowels until the third day, when a simple soap-and-water enema should be given. If a good result is obtained then, and not till then, a mild aperient may be administered. If there is no result, only harm will be caused by adding an irritant such as turpentine or the popular ox or human bile to the enema: the gut has not yet recovered, and the patient should be left for a further twenty-four hours and the soap-and-water enema repeated.

The same line of treatment, of rest, should be followed in regard to the wound. If there is no tube the dressing should not be touched until the tenth day, unless there is pyrexia or pain. Much harm and risk of infection are caused by the daily dressing of wounds which if left will heal completely. If there is a tube the wound should be dressed and the tube gently rotated on the second day; as the tube is loosened it may be removed—at once if there is no discharge, and portion by portion as it is extruded if there is a purulent discharge. This, like all other dressings, should be performed with unwashed hands. Washing can rarely be complete, and is impossible if there are forty cases to be dressed in the same ward; but the dressing in every step should be carried out with sterile forceps: even the removal and insertion of sterile safety-pins into tubes can easily be performed with a little practice. The general use of this technique will do more than anything else to reduce cross-infection.

Conclusion

In conclusion I would like to give a word of praise to so many of the young surgeons working in the Services. Men of the surgical specialist or graded surgeon type who are all young and have not had an enormous amount of experience have often been confronted with these dangerous and severe cases. They have risen to the occasion, have operated, and have succeeded in saving patients whose condition appeared to be hopeless. I believe their two greatest assets are the powers of adaptability and of making rapid decisions. Cultivate them and you will succeed in the war surgery of the abdomen.

The Home Office draws attention to the Poisons (Amendment) Rules, 1942 (S.R. & O. 1942, No. 155), which were made by the Secretary of State on January 13, 1942, and came into operation forthwith as provisional rules in England and statutory rules in Scotland. The new Rules provide for the inclusion of surgical spirit (in which a small quantity of brucine has been substituted for diethyl phthalate) in Group II of the Third Schedule to the Poisons Rules, 1935, thereby exempting the new formula from the restrictions governing the sale of brucine. The sale of surgical spirit in accordance with the new formula will, however, remain subject to the Methylated Spirits Regulations, 1930, which require surgical spirit to be labelled "For external use only—not to be taken." The general restrictions which apply to brucine as a poison included in Part I of the Poisons List are not otherwise affected by the new Rules.

THE ARSENIC CONTENT OF HAIR AND BONE IN ACUTE AND CHRONIC ARSENICAL POISONING

REVIEW OF TWO CASES EXAMINED POST-HUMOUSLY FROM A MEDICO-LEGAL ASPECT

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The importance of the keratin tissues from a medico-legal point of view is well recognized in cases of arsenical poisoning, as they appear to show a selective absorption and irreversible fixation of arsenic from the blood stream. This becomes peculiarly true in examinations carried out post-humously, as in the two cases here recorded. While other organs, such as the liver, kidneys, and spleen, contain more arsenic and are more suitable for analysis in material at necropsy in acute cases, the hair, nails, and bones acquire special significance in chronic cases and when long intervals of time intervene with extensive putrefactive decomposition. If the patient survives a few weeks after a single dose of arsenic the chances of finding the poison in any of the viscera are very remote, although it may be detected in the hair and nails (Smith, 1934). Althausen and Gunther (1929) claim that the amount of arsenic in the hair per unit of weight surpasses that in any other tissue and is retained much longer. The detection of arsenic in these tissues after an interval of over nine years in the ground, as in the present two cases, is to our knowledge the longest period thus far recorded.

The absolute concentration and relative distribution of the arsenic along the shaft of the hair are likewise important in deciding the amount of the fatal dose and the interval before death, as the average weekly rate of growth of hair for an adult is stated to be 1 to 3 mm. (Savill, 1937). The present report provides evidence for the presence of arsenic in the proximal portions of female hair after as short an interval of fatal illness as thirty hours. This would appear to indicate that it may be deposited in detectable amounts much earlier after the onset of poisoning than previously recorded. The shortest period in the literature is five days (Bergeron, Delens, and L'Hôte, 1880).

Case I

A man 5 ft. 8 in. in height, aged 76 years, and weighing 160 lb. at the start of illness, died on December 18, 1929, after being ill for forty-two days. Although stated by his daughter to have been in comparatively good health and well the previous day, he developed abdominal cramps and pains associated with nausea and vomiting on November 7, 1929. He remained nauseated throughout his illness, was unable to retain even fluids, and became progressively weaker, suffering from loss of appetite and thirst. His tongue was furred, his lips were sore and parched, and sordes developed in about a week. When seen by a physician on November 10 and daily till November 15 he was almost helpless. He was emaciated, with scaphoid abdomen; the face was pale, the skin drier than normal and mottled, and the liver enlarged, with vague tenderness over it; he became constipated, and the pulse was weak, rapid, and irregular. A ventricular systolic murmur was heard, but the heart sounds were very faint. The eyes were puffy and the ankles somewhat oedematous; the urine contained albumin. He complained, too, of pains in his shoulders, knees, and ankles.

About November 20 the patient was examined by a second physician, and again once or twice before death. At the first visit he was in a very weak emaciated condition, was pale and anaemic-looking, with anorexia and distaste for food, and was suffering from gastric irritability with attacks of vomiting and diarrhoea. He complained also of muscular weakness and vague muscular pains. His eyes were sunken and watery and the lids puffy. He was listless and unable to take anything by mouth. The lips were rather cyanosed and showed sordes. The abdomen was scaphoid and tender, especially in the epigastric region. The temperature was subnormal and the blood pressure low, and he seemed to be in a state of collapse. The skin showed a certain degree of keratosis, especially of the palms of the hands and soles of the feet. In addition there were signs of an embarrassed and failing heart, with a weak rapid pulse, faint heart sounds, and oedema of the feet. The urine was scanty and contained albumin and some pus, which appeared to be associated with an enlarged prostate. The emaciation and dehydration were progressive, and he weighed about 125 lb. at death. The death certificate gave enterocolitis as the cause of death, but his physician stated that gastro-enteritis of unknown origin would have probably been a more correct diagnosis. No epidemic gastro-enteritis was prevalent in the vicinity at that time.

Fully detailed symptoms and clinical findings were difficult to obtain owing to the loss of records of the attending physicians and to the lapse of time.

The body was exhumed on March 2, 1939, 9 years and 2½ months after burial. The outer wooden casing was rather mouldy, but was intact. The coffin lid, the coffin generally, and the burial clothes were in excellent condition. The flesh had disappeared from the whole body, but the hair (described by his daughter as a fringe around a bald head) and moustache, of the large kind, were well preserved. As mentioned subsequently, the hair, which had a brownish-black colour, was scraped off the scalp and face, and weighed 26 grammes. This of necessity included the debris of the scalp remains. Three vertebrae in a somewhat decalcified condition, weighing in all 28 grammes, were also removed for further examination, but no finger-nails or toe-nails could be found. The body had not been embalmed, nor had arsenic been prescribed or used in the course of the illness.

Case II

A short female of an approximate weight of 180 lb. and aged 74 years, who had apparently been in good health, suddenly while at breakfast on October 24, 1929, developed severe abdominal cramps and vomiting. When seen by her doctor a few hours later she was still vomiting a bile-stained fluid and was very thirsty. Her tongue was furred and the pulse weak and rapid. Severe pain was present, with tenderness over the upper abdomen, especially on the right side. She appeared slightly jaundiced. The cramps and vomiting continued, with some diarrhoea, and she lapsed into coma shortly before death, which occurred on October 25, thirty hours after the onset of symptoms. Here again, owing to lapse of time and loss of the physician's records, a detailed history of the symptoms was unobtainable.

This body was also exhumed on March 2, 1939, approximately 9 years and 4½ months after burial, and lay about 1½ feet to the north of the body of Case I. The coffin and the outer wooden casing had rotted, and the upper surface of both had collapsed to some extent. The burial clothes were damp and mouldy. The flesh had entirely disappeared from the head and face, chest wall, and extremities, but the lungs, heart, abdominal viscera, and posterior part of the body had fused and turned into adipocere. The ribs had more or less collapsed as well, and one could only approximately locate the liver region. The hair, though very damp, was in a fair state of preservation, but the finger-nails and toe-nails had disintegrated. As subsequently mentioned, the hair from the head, with the remains of the scalp (70 grammes), and adipocere from the liver region (140 grammes) were removed for examination for arsenic. Here also the body had not been embalmed, nor had any arsenic been used medicinally.

Adequate samples of soil from the surface, between the two graves at a depth of 5½ feet, from twenty-five yards away, and elsewhere, as well as portions of the outer wooden casing,

coffin lid, and burial clothes, were removed and subsequently tested for the presence of arsenic, with uniformly negative results.

Case III

A further exhumation from the same burial lot was made on April 2, 1939, and is recorded because of its relation to the previous two cases. A stout female, aged approximately 40 years, who died of pulmonary oedema in March, 1930, within twenty-four hours of an operation for chronic appendicitis, had lived in the same house as Cases I and II and had eaten the same food and been drinking the same well-water as the others. This is a confirmatory point in the elimination of the possible source of the arsenic. She was therefore exhumed, 9 years and 1 month after burial; she lay 1½ feet to the south of Case I. The coffin lid and the outer casing had collapsed at one point, and were in a mouldy dilapidated condition. The remains of the body were damp and the burial garments sodden and mouldy. The hair was matted but still identifiable. The brain consisted of a pulpy mass. The lungs had disappeared. The heart had fused with the diaphragm and become saponified. The liver had maintained its outline remarkably well and had become adipoceratous. The intestines, spleen, kidneys, and other abdominal organs had fused with the lumbar psoas muscles and been converted into adipocere. The flesh of the arms and legs, the finger-nails, and the toe-nails had disappeared. Portions of the hair and scalp (78 grammes) and a portion of the liver (250 grammes), as well as four vertebrae partially decalcified, the left tibia and patella, fragments of the skull, and remains of the brain, were taken, but in view of the absence of arsenic in the hair and liver no further examination was deemed necessary. The amounts used for examination were 57.5 grammes of hair and 116 grammes of the adipoceratous liver. A sample of soil was taken from both sides of the grave about five feet deep as well as from the top soil and from soil about twenty-five yards to the east, and these also proved negative for arsenic.

The ground in the cemetery sloped slightly from north to south, and the drainage was in the same direction, although the elevation of the three burial lots was fairly level. It is of interest to note that both female bodies (Case II and Case III), lying to north and south of the male (Case I), were adipoceratous, while all the flesh had disappeared from the latter. This appears to be related to the integrity of the casket of the male body and possibly also to his emaciated condition at death.

Analysis

The material available for analysis in Case I comprised 26 grammes of moist mixed hair from face and scalp and 28 grammes of bone, consisting of three vertebrae. In Case II there were 70 grammes of moist hair from the scalp and 140 grammes of adipocere from the region of the liver. In addition the usual specimens of burial clothes, coffin wood, and soil were examined.

The methods employed were the Reinsch for qualitative purposes and the Marsh-Berzelius for quantitative determinations following the technique as given by Lucas (1931). Moisture was first removed by drying to constant weight at 100° C. Organic matter was oxidized with magnesium nitrate by the Stryzowski procedure (Bamford, 1940). In the case of the vertebrae the nitric-sulphuric acid digestion recommended by the Royal Commission on Arsenical Poisoning was employed. For purposes of the Marsh test special mossy zinc (B.D.H.) was used, and analytical hydrochloric acid distilled from dichromate. The zinc was sensitized with cadmium chloride.

Control tests with our reagents and apparatus showed a sensitivity of about 0.01 mg. arsenic in the Reinsch test and 0.001 mg. in the Marsh using a solution of analytical arsenious oxide, resublimed. This material was also employed in the preparation of standard mirrors. In blank controls both tests were negative after thirty minutes. It has been found necessary to be careful in the use of stannous chloride for the reduction of arsenate to arsenite prior to the formation of arsine in the Marsh test because most specimens of the analytical grade are badly contaminated with arsenic. The results of the quantitative analysis are given in the Table.

Table showing Results of Quantitative Analysis

	Tissue	Weight of Tissue		Arsenic	
		Moist	Dry	Found	Per 100 gm.
		gm.	gm.	mg.	mg.
Case I ..	Hair	11·0	3·4	0·015	0·44
	Bone	19·4	15·5	0·008	0·05
Case II ..	Hair	20·0	7·4	0·024	0·32
	,, (proximal)	5·7	3·5	0·027	0·77
	Adipocere ..	36·5	23·0	0·006	0·02

A further analysis of the hair of Case II was done after separating the distal portions of the shafts from the proximal as judged by the presence of follicles or portions of scalp: 4.4 grammes of dry hair (distal) proved negative to the Marsh test, while 3.5 grammes of dry hair (proximal) gave 0.027 mg. arsenic, equivalent to 0.77 mg. per 100 grammes.

Qualitative Reinsch tests done on adequate portions of burial clothes, coffin wood, and soil from the immediate vicinity of and between the graves and from about twenty-five yards' distance both north and south, were negative for arsenic. A test done on a half-litre of the water in the neighbouring well used previously by all three persons was also negative.

The presence of a small amount of arsenic in bone and abdominal adipocere is to be noted in these cases.

Discussion

The findings in these three cases are of interest for several reasons.

1. The detection of arsenic in hair after more than nine years in the ground is in our opinion worthy of note from a medico-legal point of view. The place of burial was somewhat elevated in relation to the surrounding terrain, and could certainly not be described as being in a moist region. This is important because of the evidence in the Armstrong and Seddon cases (Willcox, 1922) and the observations of Smith and Hendry (1934), which suggest that keratin tissues can fix arsenic from a liquid medium and thereby concentrate it many times in the tissues. On the other hand Smith and Hendry claim that 40% of arsenic so fixed can be washed out of hair after prolonged soaking. The presence of rock containing crystals of arsenopyrite was established in the neighbourhood about the time of exhumation in the present cases. The analysis of the tissues of the third cadaver—Case III—adjacent to and to the south of those in question, did not, however, produce any arsenic, in spite of the fact that the coffin had partially collapsed and the remains were damp and adipoceratous, as in the case of the other female—Case II.

2. The presence of arsenic in the proximal portions of the hair of Case II and its absence in the distal portions is also worthy of note because of the short period of illness before death. This was only thirty hours. In Case I it was forty-two days. The shortest period for the detection of arsenic in hair recorded in the literature is five days (Bergeron, Delens, and L'Hôte, 1880), in a fatal case—that of a girl—after the ingestion of 50 grammes of Paris green. The concentration found in the hair was stated to be 1.1 mg. Heffter (1915), however, states that no arsenic could be discovered in the hair of a person who died probably from six to eight hours after taking a single fatal dose. The dampness of the hair in Case II apparently did not cause extension of the arsenic from the proximal end.

3. The concentration of arsenic in the specimens recorded in the Table is low at 0.3 to 0.44 mg. per 100 grammes of hair. Several factors, however, enter into the determination of this level, such as the amount originally absorbed and the time interval before removal of the hair specimen. The summary given by Smith and Hendry (1934) estab-

lishes a figure of 1 to 3 mg. as usual in acute and chronic poisoning. In the Armstrong case it was only 0.45 mg. probably eight days after the first dose. Two of five cases recorded by Schwartz and Deckert (1936) showed concentration for scalp hair at 0.1 and 0.5 mg. in chronic arsenical poisoning from wine. It is of great importance to consider the presence or absence of arsenic in normal hair. Althausen and Gunther (1929) record two analyses—0.08 and 0.16 mg. of arsenic per 100 grammes of hair of known history. The locality and previous treatment are of paramount importance in this consideration. Wührer (1937) carried out thirty analyses in Berlin on both male and female hair, mainly from barbers' shops: the great majority were at concentrations between 0.015 and 0.038 mg. of arsenic per 100 grammes of hair. Bagchi and Ganguly (1937) found between 0.056 and 0.094 mg. in four normal cases in India. The results of Myers and Cornwall (1925) are much more variable and less convincing. No method of analysis is given. Twenty-one specimens of normal hair were examined, and nine were reported as negative. The twelve recorded as positive varied from 0.05 mg. up to 10.6 mg. There is a doubt whether some of these individuals were receiving or had received arsenical therapy. The question of "normal" arsenic in hair is therefore one for further investigation, but the general conclusion to be drawn tentatively is that the value is usually below 0.1 mg. of arsenic per 100 grammes of hair.

4. The presence of a trace of arsenic in bone, presumably in the form of the highly insoluble calcium arsenate, is to be expected, especially in chronic or subacute poisoning. In 1889 Brouardel, according to Webster (1930), stated: "Arsenic accumulates very sensibly in the spongy tissue of bones and becomes fixed in such manner that its presence can be detected, in the bones of the skull or vertebrae particularly, some time after every trace has disappeared from organs such as the liver, in which it is localized in greater amount." Webster says: "It would appear that this localization in the bones is less marked and the elimination is more rapid when arsenic is absorbed in quantities sufficient to cause rapid onset of symptoms of poisoning—a point which has been brought out by Chittenden (1884-5) in connexion with differentiation between acute and chronic arsenic poisoning, the bones tending to retain arsenic in the chronic cases while, in the acute cases, arsenic may not be found in them." Even in the acute condition the presence of traces had been established in the Seddon and Armstrong cases (Willcox, 1922). Its presence in bone after such a long period in the earth is of significance in the present cases.

5. The quantities of arsenic found in the hair and bones in Case I and in the hair and adipocere in Case II, though small, indicate that more than the accepted fatal dose must have been taken before death; and the symptoms described in the two cases respectively point to chronic and acute arsenical poisoning, thus conforming with the conditions necessary for proof of death from arsenic poisoning as emphasized by Taylor (1928).

Summary

Hair, bone, and adipocere, as the remains of two individuals who had been buried for almost nine and a half years, were examined from a medico-legal point of view for the presence of arsenic. In one case—chronic poisoning—the quantities found were 0.44 mg. in hair and 0.05 mg. in bone; in the second case—acute poisoning—0.32 mg. in hair and 0.02 mg. in adipocere, per 100 grammes of dry tissue. In the acute case a concentration of 0.77 mg. was estimated in the proximal portion of scalp hair following a period of fatal illness of only thirty hours.

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AN ANALYSIS OF THE INCIDENCE OF "FAINTING" IN 5,897 UNSELECTED BLOOD DONORS*

BY

C. L. GREENBURY, M.B., B.S.

The object of the present investigation was to determine to what extent the incidence of fainting in blood donors was influenced by age, sex, occupation, lack of food, fatigue, and the temperature of the room in which bleeding took place. It was hoped to assess fatigue by the numbers of hours donors had worked on the day of bleeding.

Method

The necessary information was collected by the nurses who attended the donors. A card of the following pattern was given to each donor.

Age..... *Sex*.....
Occupation .....
Hours since last meal .....
Hours of work on day of bleeding.....
Hours in bed on previous night .....
Temperature of bleeding-room.....

In order to simplify sorting, yellow cards were provided for females and blue for males. If a donor fainted an "F" was put at the top right-hand corner of the card. A donor was considered to have fainted if he or she had any of the symptoms associated with fainting severely enough to necessitate interruption of the normal routine. The decision in almost all cases was left to the nurse in charge of the donor. The mildest phenomenon that was assessed as a faint was giddiness or nausea which rendered it more prudent for the donor to be rested for a minute or two on the couch after bleeding, instead of being taken immediately to the recovery room according to the regular procedure. This minimum was chosen so that all cases which caused delay in the process of bleeding might be included. No account has been taken here of donors who fainted after they had left the building.

Data were obtained from 5,897 unselected donors—1,760 males and 4,137 females—from the areas covered by the London Sectors IV, V, VI, and VII. This analysis includes two series, A and B, the sole difference being that, in the former, only the age, the sex, and the number of hours since the last meal were known. (See Tables.)

The females have been divided into arbitrary age groups —18-25, 26-35, 36-45, and over 45. The same process was originally applied to the males, but as the attack rates in the groups under age 45 differed inappreciably, the groups involved have been amalgamated for the main comparisons.

* A report to the Medical Research Council from the North-West London Blood Supply Depot.

Results

In the following results differences have been regarded as significant when Difference/Standard Error of Difference is greater than 2—i.e., when the odds are 20 to 1 against such differences occurring by chance.

Age and Sex.—The combined fainting rate for the sexes was 4.93%. The incidence declines with age for both males and females (Table I), excepting for the 36-45 age group in males,

TABLE I

Age in Years	Fainting Rate		Diff. between Male and Female Rates/ Stand. Error of Diff.
	Males	Females	
18–25	4·09% (367)	7·62% (1,246)	2·36
26–35	4·07% (540)	6·02% (1,163)	1·65
36–45	4·34% (484)	3·59% (918)	0·79
Over 45	1·63% (369)	3·58% (810)	1·82
All ages	3·64% (1,760)	5·49% (4,137)	

Figures in parentheses refer to the number of donors in each group.

but the decrease is not uniform for either sex. For males the rate under age 45 is significantly greater than that over 45, and for females the incidence under age 35 is significantly higher than that for older women, as will be seen from the following comparison:

			Diff./S.E. of Diff.
Females	Under 35 years 6·85% (2,409)	Over 35 years 3·59% (1,728)	4·21
Males	Under 45 years 4·17% (1,391)	Over 45 years 1·63% (369)	2·32

When the attack rates for the sexes are compared it will be noted that at every age, except in the 36-45 year group, the incidence of fainting is greater among females, and in the 18-25 year group the difference reaches statistical significance. In view of the dissimilar age constitution of the populations of the two sexes it is invalid to use their crude attack rates for comparative purposes. If, however, a composite figure for comparison is required, a standardized value can be obtained or, more satisfactorily, the following procedure can be employed:

The actual number of attacks among the males was 63; if they (the males) had experienced the same incidence at specific age groups as the females the expected number of faints would have been 91. The fainting rate among males is then seen to be statistically lower than that for females, since, when the test is made by the appropriate formula:

$$\frac{\text{Actual}-\text{Expected}}{\sqrt{\text{Expected}}}=\frac{63-91}{9.54}=2.9$$

the ratio exceeds 2, the usually accepted criterion of significance.

Occupation.—Classification into Factory, Clerical, Miscellaneous, and Domestic Occupations (Tables IIA, IIB), while not ideal, was the only one found to be practical. The domestic group includes ladies of leisure, part-time workers, and domestic servants. The incidence of fainting among clerical workers was unduly high in the younger age group of both series:

	Non-clerical Workers	Clerical Workers	Diff./S.E. of Diff.
Females (18–25 group)	4·77% (419)	10·89% (202)	2·85
Males (18–45 group)	3·65% (603)	7·19% (153)	1·91

Hours Elapsing between Last Meal and Bleeding.—There does not appear to be any general tendency for the fainting rate to increase when long periods have elapsed between bleeding and the last meal. It is of interest to note, however, that among female clerical workers in the 18-25 year group there is a progressive rise in fainting rate as the time between last meal and bleeding increases.

	Time after Last Meal (hrs.)		
	0–2	2–4	Over 4
Female clerical workers in 18–25 group	4·94% (81)	12·97% (86)	20% (35)

Hours of Work on Day of Bleeding.—There was no tendency in this series for the fainting rate to increase with hours of work on day of bleeding. The high rate among females between 26 and 35 years who have worked for more than eight hours is not significant, since the number (32) in the group is so small.

Temperature of Bleeding-room.—No effect of temperature is apparent in this series.

Hours of Sleep on Nights preceding Bleeding.—Since the investigation took place at a time when there were few air

TABLE IIA.—*Females*

Group	Age	Percentage Fainting in Each Age Group
A & B	18–25	7·62% (1,246)
	26–35	6·02% (1,163)
	36–45	3·59% (918)
	45+	3·58% (810)

Group	Age	Interval in Hours since Last Meal		
		0–2	2–4	Over 4
A & B	18–25	7·30% (589)	7·28% (481)	9·66% (138)
	26–35	6·73% (550)	5·53% (501)	4·67% (107)
	36–45	5·06% (437)	1·95% (411)	4·17% (68)
	45+	3·72% (376)	3·71% (377)	1·75% (57)

Group	Age	Occupations			
		Factory	Miscell.	Clerical	Domestic
B	18–25	3·90% (205)	6·25% (144)	10·89% (202)	4·29% (70)
	26–35	9·52% (126)	4·46% (112)	4·03% (124)	6·99% (229)
	36–45	6·25% (64)	4·81% (104)	0·00% (53)	4·35% (253)
	45+	0·00% (16)	3·45% (58)	2·25% (19)	3·33% (360)

Group	Age	Hours of Work on Day of Bleeding		
		0–4	5–8	Over 8
B	18–25	7·60% (171)	6·34% (284)	4·32% (61)
	26–35	4·93% (142)	6·04% (149)	18·75% (32)
	36–45	4·65% (86)	4·44% (90)	0·00% (18)
	45+	Insufficient data		

Group	Age	Temperature of Bleeding-room			
		–64° F.	–69° F.	–74° F.	75° F. and over
B	18–25	8·33% (84)	8·07% (223)	5·62% (89)	6·67% (45)
	26–35	7·00% (100)	9·13% (230)	4·00% (75)	0·00% (16)
	36–45	2·78% (72)	4·76% (189)	8·77% (57)	0·00% (20)
	45+	3·49% (86)	2·75% (183)	2·73% (67)	5·88% (17)

TABLE IIB.—*Males*

Group	Age	Percentage Fainting in Each Age Group
A & B	18–25	4·09% (367)
	26–35	4·07% (540)
	36–45	4·34% (484)
	45+	1·63% (369)

Group	Age	Interval in Hours since Last Meal		
		0–2	2–4	Over 4
A & B	18–45	3·91% (640)	3·45% (551)	6·15% (195)
	45+	1·04% (180)	1·04% (158)	3·45% (29)

Group	Age	Occupation		
		Factory	Miscell.	Clerical
B	18–45	3·85% (286)	3·47% (317)	7·19% (153)
	45+	2·56% (39)	0·79% (126)	3·13% (32)

Group	Age	Hours of Work on Day of Bleeding		
		0–4	5–8	Over 8
B	18–45	4·12% (243)	4·40% (341)	4·90% (102)
	45+	2·25% (89)	1·41% (71)	0·00% (19)

Group	Age	Temperature of Bleeding-room			
		–64°	–69°	–74°	75° and over
B	18–45	3·73% (134)	4·10% (439)	1·52% (131)	3·23% (31)
	45+	0·00% (28)	2·47% (81)	2·94% (34)	0·00% (5)

Figures in parentheses refer to the number of donors in each group.

raids, the number of donors who did not have a good night's rest was too small to be analysed with advantage.

Conclusion

Though the series is not large enough for many definite conclusions to be drawn from it, it would seem that the young faint more than the old and females more than males, and that the incidence is higher among clerical workers than among other groups. With regard to the significance of hunger and fatigue, for example, the smallness of numbers is naturally most obvious at the extremes of the hours between last meal and bleeding and of the hours of work on day of bleeding, where the effects would be most evident. The figures give little information, therefore, concerning the effects of these two factors. There is, however, a strong impression at this depot that hunger and fatigue are contributory causes in the fainting of donors.

It is not improbable that the high incidence of fainting among clerical workers is due to the fact that they are a selected physical type rather than to an occupational effect. It is especially likely that because of conscription the residual male clerical workers are below the normal physical standard.

I should like to thank the nurses at the depot who collected the necessary information from donors, and Dr. W. T. Russell for his help in preparing the figures for publication.

AVITAMINOSIS IN APPARENTLY HEALTHY TRINIDADIANS*

BY

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The gross states of avitaminosis seen in the dispensaries (Deane, 1938) and hospitals (Fletcher, 1937) of Trinidad have already been described. There is also a vast amount of subclinical avitaminosis which goes untreated.

This is an account of apparently healthy men who were examined for stigmata of vitamin deficiency when they applied for work in the oilfields. Besides being of academic interest such an investigation has a practical value from the employer's point of view: the worker who suffers from avitaminosis obviously cannot be very efficient; he readily falls sick and has to be looked after, and, when injured, his recovery time is excessively prolonged.

The group investigated is, in a way, selected—by the members of the group themselves. The average work applicant does not present himself for what has the reputation of being a fairly severe medical examination unless he feels that he has a reasonable chance of success. A small proportion of men, though sick, may be driven by lack of money or a nagging wife to seek work; a still smaller proportion with gross lesions may try to slip by what they think may be a cursory examination in the hope of being able to advance fraudulent compensation claims later.

TABLE I

Race	No. Examined	Average Age	Age Limits
East Indian	168	27·99	17–50
Negro	820	28·07	14–64
Mixed creole	16	27·90	21–55
Chinese..	7	27·14	21–30

In this investigation 1,011 consecutive applicants were examined. The race and ages of these men are given in Table I.

* Abstracted from an M.D. thesis, University of Cambridge.

Signs of avitaminosis A which appear most frequently in children (e.g., Bitot's spots, xerophthalmia) would not be expected to occur very often at these ages. These men have passed from childhood without suffering from some of the more serious sequelae of avitaminosis (e.g., keratomalacia), and therefore represent a "seeded" group. Those less fortunate have either been carried off by intercurrent disease or been forced to take work in keeping with their poor physical condition. Thus it is further emphasized that the group investigated is a picked one, with health above the average.

Avitaminosis A

Growth Impairment.—Unfortunately a height-weight check was not made. Such cases as were noted under this heading were those of puny physique with a markedly under-developed musculature. Such a condition is obviously not entirely due to continued lack of vitamin A but to other factors (e.g., generalized malnutrition and cachectic states such as ankylostomiasis and malaria). Under-development of this type occurred in 15 (8.9%) of the East Indians and in 3 (0.37%) of the negroes. No instance was found among the mixed creoles or Chinese.

Bitot's Spots.—This sign occurred in one subject—an East Indian aged 23 who had also a rachitic chest, markedly carious teeth, and scaliness of the arms.

Xerophthalmia.—The incidence of xerophthalmia is shown in Table II.

Finely Scaled Skin.—The lesion is labelled thus to distinguish it from a coarsely scaled skin, which is found with vitamin B_2 and probably B_6 deficiency. Usually the skin lesions of avitaminosis A precede the objective eye changes (Mackay, 1937), but in this series one man had a finely scaled skin and Bitot's spots, and another had xerophthalmia with phrynodermia. The scaliness in question manifests itself in the dark-skinned races by a loss of the natural mat surface which is characteristic of a healthy skin in these people. The powdery scales give the

TABLE II

	Race	No. Affected	Associated Deficiencies					Dental Caries
			A	B_2	B_6	C	D	
Xerophthalmia	E.I.	2		1			1	1
	N.	3	1	1				3
	M.C.	0						
	Ch.	0						
Finely scaled skin ..	E.I.	5	1	4	2			3
	N.	19	8	15	5			10
	M.C.	1		1				1
	Ch.	0						
Phrynodermia	E.I.	13	2	7	2			9
	N.	63	10	36	4			32
	M.C.	1						1
	Ch.	0						
Scrotal dermatitis ..	E.I.	16	3	11	1	1		8
	N.	36	7	20				14
	M.C.	0						
	Ch.	0						
Coarsely scaled skin ..	E.I.	18	7	10	6			10
	N.	149	19	45	12			57
	M.C.	1						
	Ch.	0						
Hyperpigmentation ..	E.I.	10	2	8	1			3
	N.	60	17	42	3			28
	M.C.	1						1
	Ch.	0						
Hypopigmentation ..	E.I.	8	2	7	1			3
	N.	49	13	38	5			23
	M.C.	0						
	Ch.	0						

impression that the skin is lighter, but this apparent hypopigmentation must not be confused with a true loss of pigment, which, I believe, is due to vitamin B_2 deficiency. This condition of fine scaliness is seen principally on the forearms, sometimes on the forehead, and less often on the shins and thighs. When seen in the last-named areas it must be distinguished from the effects of certain forms of vitamin B_2 lack. Fine scaliness has also to be distinguished from ringworm and from leprosy. The distribution of this manifestation is included in Table II.

Phrynodermia.—This condition, which has already been adequately described by Nicholls (1938), must in this type of investigation be carefully distinguished from the condition I have termed "pseudo-phrynodermia" (Earle, 1941). Here a toad-skin appearance is produced by a plugging of the pilosebaceous follicles of the wrist and olecranon surface of the elbow by lubricating oil. It occurs in uncleanly negro and East Indian motor mechanics, garage hands, etc., and may be accompanied by a low-grade infection of the hair follicles. Table II shows that phrynodermia is much more frequent than finely scaled skin among both East Indians and negroes.

Other Manifestations.—Other signs which have been ascribed to vitamin A deficiency (nyctalopia; degeneration of respiratory, alimentary, and urinary tract epithelium; lowered resistance to ergot; nerve degeneration) were not seen or could not be determined.

Avitaminosis B_1

This has been held to be a part cause of impaired growth, which has already been dealt with above. The other manifestations of vitamin B_1 lack (loss of tone of the gastro-intestinal tract, beriberi) were not seen or could not be investigated.

Avitaminosis B_2

Pellagra.—Mild pellagra occurred in 4 instances (2 in East Indians and 2 in negroes). Stannus (1940) observes that subclinical pellagra or pellagroid states may continue for months or even years before being succeeded, in untreated cases, by frank pellagra. Pellagra may be precipitated by: (*a*) the consumption of large amounts of sugar; (*b*) increased work; (*c*) infections such as ankylostomiasis and chronic amoebiasis; (*d*) snake venom; and (*e*) cyanogenetic substances such as cassava. Factors (*a*), (*b*), (*c*), and (*e*) are common in Trinidad, as is the subclinical pellagroid state, yet pellagra is an uncommon condition in the colony.

Angular Stomatitis.—This is held by Nicholls (1938) to be due to deficiency of vitamin B_6 and by Sebrell and Butler (1938) to be a manifestation of ariboflavinosis. Only two members of the series, both East Indians, showed this sign. In one of them scrotal dermatitis was also present.

Scrotal Dermatitis.—Here the scrotal skin is thickened and has a glazed or sodden appearance. The normal scrotal rugae are flattened out and the whole organ may have an enlarged appearance. Pruritus is a frequent feature. The condition has to be distinguished from filarial lymph-scrotum and from ringworm. Its incidence is given in Table II, the percentages being: East Indians 9.53, negroes 4.44. Thus this sign of avitaminosis B_2 is more than twice as frequent among East Indians as among negroes.

Manifestations probably due to Lack of Vitamin B_2

The signs described below are not specially described in the textbooks, but they occur frequently enough, both in the series and in my practice, to make me suspect their being caused by avitaminosis B_2. These conditions are often found in association with tropical ulcer, which Clements (1936) believes to be due in part to lack of vitamin B_2.

Coarsely Scaled Skin.—This sign occurs principally on the lower extremities, and is bilateral in distribution. It is located mostly on the anterior borders, but may also be seen on the calves, knees, and, rarely, on the anterior surface of the lower half of the thigh. The affected skin is coarsely scaled, differing in this way from the fine "branny" scaling, usually of the forearms, which is seen in avitaminosis A. The skin, unlike that in true pellagra, is not especially influenced by exposure to the sun. It may show a slight intensification of pigment, but such hyperpigmented skin is dull in appearance and unlike that described under the heading of "Hyperpigmentation." In some cases this type of scaly skin is found in association with the type of hyperpigmentation and hypopigmentation described below, and it is likely that all three signs are but different stages or manifestations of the same vitamin deficiency. The incidence is shown in Table II.

Hyperpigmentation and Hypopigmentation.—The hyperpigmentation occurs on the tibial surfaces, less often on the knees and lower half of the thighs. It exists in two distinct types: first, a darkening of the skin, together with a roughening and scaliness somewhat similar to that described in the paragraph above; and, secondly, a condition in which the skin has an atrophic appearance, remarkably like the scalp-skin of those unfortunates who, in the early days of *x*-ray therapy, sustained an overdose when treated for ringworm of the scalp. The skin in question has a glazed shiny appearance, quite unlike the glossy mat surface of the healthy negro or East Indian skin. The two types of pigmentary change frequently coexist; in fact, although I have placed the two conditions under separate headings, I believe that they have a common origin, and their allocation to one group or the other depends upon which manifestation is the more prominent. Sometimes the two signs are about equal in intensity, and then the ensuing mottled appearance closely resembles the erythema ab igne seen in white races. The margins of these areas of altered pigmentation blend imperceptibly with the surrounding healthy skin; there is no clear-cut line of demarcation. Besides having an unhealthy atrophic appearance, the skin is partially denuded of hair and has a plucked appearance. Total alopecia of the affected areas does not, however, occur. There is slight impairment of the sensation of light touch, but I have noted no other sensory disturbances. On such areas of lowered vitality a slight trauma may produce the so-called "tropical ulcer," or the idiopathic form of tropical ulcer may arise from no apparent cause. The incidence of both hyperpigmentation and hypopigmentation is given in Table II.

Tropical Ulcer.—The work of Clements (1936) suggests that tropical ulcer is closely associated with vitamin B_2 deficiency, the causative organisms being identical with those found in Vincent's disease. King (1940) has suggested that a possible relationship exists between pellagra and Vincent's disease. It is thought that Vincent's disease is also related to a deficient intake or utilization of nicotinic acid and its allied pyridine derivatives of the vitamin B_2 complex. Tropical ulcer, though frequently seen among actual employees, their wives, "keepers" (mistresses), and children, is rarely seen among applicants for work. This is easily explicable: tropical ulcer is a very crippling condition, and a man with this lesion, if passed as fit, might later advance a false compensation claim. It was therefore broadcast that those with ulcerated legs need not apply for work. Those few cases (three in number) which were detected at examination were in men who hoped that a lax examination might allow them to slip through. Typical scars of tropical ulcer occurring on the area of "deficient arterial overlap" (the anterior tibial surfaces, ankle, and dorsum of the foot) were as follows: East Indian, 38 (22.63%); negro, 156 (18.6%); mixed creole, 2 (12.5%); Chinese, 0. The lower incidence among mixed creoles and Chinese may be due not only to the richer dietary enjoyed by these races but also to the fact that they avoid heavy manual work, in the performance of which the traumata that usually initiate the condition are acquired.

Avitaminosis C and D

No evidence of deficiency of vitamin C was seen in the series. An exception is dental decay, but since polyavitaminosis and also calcium lack are concerned in its production it will be discussed separately.

With regard to avitaminosis D, rachitic chest and bony deformity were seen in 3 men: 2 were East Indians, one of whom showed phrynodermia and marked dental caries; the third was a negro who also had advanced dental caries. No signs of this deficiency were found among the mixed creole or Chinese applicants.

Dental Deficiencies

Dental caries was extremely common, and usually involved several teeth; the vast majority of carious teeth were either premolars or molars. The incisors and canines were not often affected. Besides the obvious caries, many gaps in the mouths examined testified to earlier extractions, and completely edentulous jaws occurred in some cases. Irregularity of alignment and tilting of the teeth in relation to the jaw are held to be the result of the deficiency of vitamins A and D; the irregularity is most pronounced in the lower incisors. Nicholls (1938) states that calcium deficiency is also a factor in the production of this lesion.

Dental defects in Trinidadians are due to improper feeding of the pregnant and lactating mother; unbalanced diet, with a deficiency of minerals, in the weaned and artificially fed child; and vitamin lack in the adult. The incidence of dental defect, as Table III shows, is very high.

TABLE III

Race	Caries Alone	Irregularity Alone	Caries with Irregularity	Pyorrhoea Alv. (very advanced)	Edentulous (One Jaw)	No. Affected
E.I. ..	48	9	14	—	2	73 (43·46%)
Negro ..	258	13	18	2	9	300 (36·5%)
Mixed creole .	6	—	2	—	—	8 (50%)
Chinese .	2	—	—	—	—	2 (28·57%)

Summary

Avitaminosis occurring in 1,011 consecutive apparently healthy men applying for work is described.

The racial incidence of the various manifestations is compared.

Lesions probably, though not certainly, due to vitamin lack are described and their incidence in the series tabulated.

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PSYCHOSIS ASSOCIATED WITH VITAMIN B DEFICIENCY

BY

ELIOT SLATER, M.D., M.R.C.P.

The case reported below is worthy of publication because it seems to be the first of the kind described in this country, and there may very well be a number of others lying unrecognized in general hospitals.

Case Report

A man aged 52 was admitted to hospital on October 8, 1941, with the following history: 1924, gastro-enterostomy; 1930, operation for adhesions; 1935, partial gastrectomy by Mr. Jennings Marshall at Charing Cross Hospital, for chronic simple ulcer. From that time there had been no further symptoms of indigestion, but in January, 1941, he began to notice a progressive loss of weight, which amounted to a stone. Six weeks later the next-door shop caught fire and "the shock of this put him to bed for six weeks, hovering between life and death." He had diarrhoea and vomiting the whole time and had lost another 13½ lb. in weight. When he got up the left leg from the knee down and the right foot were "dead." He attended an out-patient department for three months, and these symptoms improved somewhat, though he still continued to have a feeling of numbness in the legs.

A complete examination of the C.N.S. showed no abnormal signs other than bilateral doubtfully extensor plantar responses and a severe stammer. The patient said that he had always stammered slightly but that it had been worse of late. No sensory changes and no signs of peripheral neuritis or subacute combined degeneration of the cord were found. A barium follow-through showed no abnormality of the gastro-intestinal tract. Examination of blood films revealed only a very slight degree of secondary anaemia (red cells 4,530,000, Hb 81%). Six days after admission he fell down in the ward and could not get up because of the numbness in his legs; he had to be lifted into bed. On October 20 he suddenly got out of bed and went into the courtyard, saying he must find a Bible. He said he was the wickedest man in Wales and must be punished for sleeping with his mother by being boiled in oil. He seemed to be slightly disorientated. The following day he was found sitting up in bed, staring fixedly at the middle of the counterpane, repeating monotonously and endlessly, "Oddle, oddle, oddle, oddle, oddle." He would interrupt this monologue to answer questions briefly, but would return to it immediately. He said that he made this noise because he was under compulsion from a spirit beneath the counterpane. Any other noise would do as well, and on request he substituted "Wacka, wacka" for the "Oddle, oddle." He was prepared to talk about his deadly sins and impending punishment, but showed no great interest in the subject. He was clearly orientated and gave no sign of failure of memory or intellectual impairment, carrying out mental arithmetic tests with accuracy and surprising speed. A full neurological examination disclosed signs previously not seen. The stammer, which was pronounced, seemed to have a dysarthric quality; there was definite perseveration in answering questions and executing commands. When put into awkward positions he maintained them in a katatonic way; he also showed echopraxia, clapping his hands repeatedly in imitation of the action once performed by the examiner. He was seen in consultation, and one consultant thought the deep reflexes were increased and the pupils sluggish and the diagnosis possibly one of G.P.I. Dr. William Sargant suggested a confusional state (without confusion) due to vitamin deficiency. Another consultant supported the possibility of a focal lesion in the left frontal or pre-frontal region. The patient continued in this state all day, and until a late hour that night was sitting up in bed in the darkness, saying, "Ay, ay, ay, ay. . . ." This activity was not resumed after a night's sleep, obtained with a powerful sedative, though the patient said that the spirit under the counterpane was still there. Two days later his condition began to deteriorate. The abdomen became very distended with flatus, and the colon was packed with faeces. A lumbar puncture on October 28 showed a normal fluid. From obstinate constipation he passed into a state of severe diarrhoea and became dangerously ill, being put on the danger list. It was noticed that the buccal mucosa was reddened. By November 2 this state was even more marked, and the tongue was bright red, raw, and clean. He was given 100 mg. of nicotinic acid and 50 mg. of ascorbic acid thrice daily. With this treatment improvement was immediate, and by November 8 diarrhoea had ceased, he was taking food well, and was sleeping naturally. His mind was clear, though he could not remember all the mental symptoms of the past. He could recollect, for instance, saying "Oddle, oddle," but not why he had done so, nor anything about the spirit under the bedclothes or being the wickedest man in Wales. On November 29 he was returned home fully recovered. The plantar reflexes still had their same rather abnormal quality and the stammer persisted, although now obviously only a stammer.

Comment

Psychoses of a paranoid and dementing type associated with pellagra have been known for many years. More recently, American authors have drawn attention to the occurrence of neurotic and neurasthenic pictures in subclinical states of vitamin deficiency (Ruffin, 1941; Jolliffe, 1941) and to the occurrence of atypical psychotic states, also when characteristic pellagrous symptoms such as stomatitis, peripheral neuritis, and skin changes were notable for their absence (Spies *et al.*, 1938; Cleckley *et al.*, 1939; Sydenstricker and Cleckley, 1941). Frequently loss of weight and ill-defined neurasthenic and gastro-intestinal disturbances are prodromal symptoms. When acute psychoses occur, they are nearly always of the stuporous and delirious type and resemble closely the toxic-confusional psychoses of acute physical illness; they often occur in association with definite physical conditions, such as alcoholism or arteriosclerosis. Frontal symptoms such as spontaneous grasping and sucking movements have also, rarely, been noted and ascribed to a "nicotinic acid deficiency encephalopathy." The case described above

presents many unusual features. The patient showed symptoms suggestive of a melancholic, a schizophrenic, and an organic state, but his condition was typical of none of these. After the prodromal period the onset was hyperacute, taking place in the course of a day; apparent mental clarity was maintained throughout, and focal frontal signs of an unusual nature were seen.

It seems very probable that with the reduced dietary of wartime the occurrence of such cases will be noted more often, and there may be many lying unrecognized in the wards of general hospitals. The appearance of stuporous and delirious states for which no gross cause can be found, especially after a period of inadequate feeding, asthenia, and gastro-intestinal disturbance, should lead to a suspicion of vitamin deficiency; and the presence of focal frontal signs should not be taken as a contraindication to such a diagnosis. If there is vitamin B deficiency, dramatic improvement will be shown within a fortnight, and this establishes the diagnosis. But American authorities are of the opinion that if the condition is allowed to persist for any considerable time a permanent dementia may ensue.

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Medical Memoranda

Staphylococcus aureus haemolyticus Septicaemia Successfully Treated with Thiazamide

The rarity of recovery from sudden and acute *Staph. aureus* septicaemia (verified by blood culture) seems to warrant the report of a case treated by the oral administration of thiazamide (M & B 760). Such cases are usually fatal, except perhaps some of those of osteomyelitis in children which are in the nature of a temporary bacteriaemia, although a few of these develop into a virulent and, usually, fatal septicaemia.

CLINICAL HISTORY OF CASE

The patient, a man aged 65, had on January 4, 1941, a very mild sore throat and moderate temperature which subsided in a day or so, although he looked ill out of all proportion to the supposed condition. He then ran a night temperature of 99° to 100° F. and had rigors at night on several occasions. During this period (January 14) a blood culture taken with glucose broth showed, after forty-eight hours' incubation, a profuse growth of *Staph. aureus haemolyticus*. This was verified by subculture on to blood agar. At this time a throat swab showed a growth only of pneumococci, haemolytic and non-haemolytic types of the *M. catarrhalis* group, and *M. tetragenus*. The blood was agglutinated against *B. typhosus* H and O, paratyphoid A, B, and C, the Salmonella group, and *Brucella abortus*, with completely negative results. A study of the leucocyte and differential counts is given in the table. It will be noted that the initial count shows a poor total response to leucocytosis but a high proportion of immature neutrophil cells. These are increased tenfold and evidently indicate a severe drain on the leucocyte reserve. Their reversion to nearly normal is seen on March 11. On January 22, when under the full influence of thiazamide, the satisfactory leucocytic response is clearly evident.

On January 15 the urine was acid, *p*H 5.5, with a moderate cloud of albumin, specific gravity 1024, and a deposit showing occasional leucocytes, epithelial cells, and mucus. The chlorides were reduced to 0.3% (normal 0.8 to 0.85%). This gave rise to a suspicion of pneumonia, possibly deep-seated, but clinical examination entirely failed to confirm this. The albumin was presumably due to renal congestion.

PROGRESS UNDER TREATMENT

Treatment was started on January 17. Eight 0.5-gramme tablets of thiazamide were given four-hourly for six doses, then six tablets four-hourly till the morning of the 24th; each dose was accompanied by 50 mg. of nicotinic acid to prevent unpleasant effects. This was in the main highly successful. There was no vomiting and the patient complained only of the amount of fluid he had to drink—namely, three pints in twenty-four hours. Altogether 82 grammes of thiazamide was given, all by the oral route. The temperature, which had been fluctuating between 100° and 102° F., fell to normal on January 24. There were no rigors during this period, but the pulse rate was 100 to 120. A blood culture taken on January 22 remained sterile after six days' observation and subculture.

Clinical recovery was complete, and the only sequelae were a patch of numbness in the front of the right thigh and right foot-drop (peripheral neuritis), which was gradually subsiding when the patient was seen on May 7, and has since completely subsided. A temporary neutropenia also was disappearing. This, too, was most likely a drug effect.

COMMENTS

In this case there seems a fair probability that the throat was the primary source of infection, despite the fact that cultures on January 14 showed no staphylococci, probably owing to too recent local treatment. But the organisms had already entered the blood stream, since they were recovered therefrom. In the blood-culture technique used the length of time taken for development is a useful indication of the degree of infection. The worst cases develop in about twelve hours and the mildest in five to six days. In our case a growth was obvious in glucose broth after forty-eight hours, indicating a fairly heavy infection (10 c.cm. of blood to 50 c.cm. of broth).

It is hoped that this short record will encourage others to use thiazamide in such cases. It is significant that the treatment was wholly oral. *Staph. aureus haemolyticus* septicaemia need not now so often connote a death sentence, and that sinking feeling which it engenders in both clinician and bacteriologist is now relieved by a new hope. Many lives will surely be saved which formerly would have been lost.

Table showing the Leucocyte and Differential Counts

Type of Cell	14/1/41		22/1/41		31/1/41		11/3/41		7/5/41		Normals	
	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total
Mature neutrophils	48	4,512	58	9,744	59	4,602	41	1,968	57	3,192	61·5	4,612·5
Immature „	38	3,572	27	4,536	20	1,560	10	480	10	560	4·0	300·0
Basophils	0		0		1	78	0		0	0	0·5	37·5
Eosinophils	1	94	0		2	156	3	144	2	112	2·0	150·0
Lymphocytes	12	1,128	14	2,352	16	1,248	44	2,112	27	1,512	28·0	2,100·0
Monocytes	1	94	1	168	2	156	2	96	4	224	4·0	300·0
	100	9,400	100	16,800	100	7,800	100	4,800	100	5,600	100	7,500*

* Varying 10% either way.

COMMENTS

In this case there seems a fair probability that the throat was the primary source of infection, despite the fact that cultures on January 14 showed no staphylococci, probably owing to too recent local treatment. But the organisms had already entered the blood stream, since they were recovered therefrom. In the blood-culture technique used the length of time taken for development is a useful indication of the degree of infection. The worst cases develop in about twelve hours and the mildest in five to six days. In our case a growth was obvious in glucose broth after forty-eight hours, indicating a fairly heavy infection (10 c.cm. of blood to 50 c.cm. of broth).

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Acute Haemolytic Anaemia following Phenothiazine Therapy

The treatment of threadworms by phenothiazine (thiodiphenylamine), as first suggested by Manson-Bahr (1940), has become increasingly popular. His series of recorded cases consists of 9 patients who were treated without any ill effects and apparently cured. DeEds, Stockton, and Thomas (1939) quoted 19 cases which were so treated; of these, 3 developed varying degrees of anaemia, the red cells in one falling to 1,500,000. Finally, Hubble (1941) reported 3 further cases of anaemia occurring in 28 patients treated with this drug; although the anaemia was not of a severe degree it was considered that there was also a certain amount of liver damage. In none of the above patients was the condition of a very serious nature, but the following case report shows the dangers which are attached to the use of this drug.

CASE REPORT

A girl aged 7 was admitted to St. Thomas's Hospital on December 16, 1941, with a history of headache and jaundice for two days. Both the patient and her sister, aged 10, had been taken to their doctor with a complaint of threadworms. The children were given a course of phenothiazine comprising 1 gramme twice daily for five days, a total of 10 grammes each. On the last day of treatment the younger child complained of headache, vomiting, and loss of appetite. Two days later she collapsed and was found to have a rapid pulse and a slight degree of jaundice. During that evening she became delirious and very pale. The urine was dark and the stools were of normal colour.

On admission the temperature was 100.2° and the pulse 144. The patient was distressed, pale, jaundiced, and dyspnoeic. Physical examination was otherwise negative, there being no detectable enlargement of the liver. The urine contained much bile and a trace of albumin. A full blood examination was not carried out at this time, but the haemoglobin was 42%. A transfusion with stored blood was immediately started, a total of two bottles being given over a period of about thirty hours. This was followed by 1 pint of 5% dextrose. At this stage the general condition was much improved, the patient taking fluids well.

On December 17 a blood examination showed: red cells, 4,090,000 per c.mm.; haemoglobin, 74%; colour index, 0.9; white cells, 18,600 per c.mm.—polymorphs 79%, lymphocytes 11%, large hyalines 6.5%, eosinophils 2%, basophils 0.5%, metamyelocytes 1%. The normoblasts were equivalent to 6% of the leucocytes. The reticulocytes numbered 2.8% of the red cells. The icteric index was 17.

No further treatment other than iron was given, recovery being uneventful. The patient was discharged on December 22, at which time she was well, apart from a slight degree of jaundice. On this date a blood count showed: red cells, 4,210,000 per c.mm.; haemoglobin, 78%; colour index, 0.93; white cells, 9,440 per c.mm.—polymorphs 55%, lymphocytes 31%, large hyalines 11%, eosinophils 3%.

No threadworms were seen while the patient was in hospital. It would seem that the patient's sister suffered from a very similar but much milder attack. She, too, has made a complete recovery.

Comment.—In reconsidering the published cases in which phenothiazine has been used it is seen that out of 58 patients so treated no fewer than 8 have shown some form of toxic reaction, at least one of which has been severe enough to require active treatment. Such a high incidence of toxicity—namely, over 13%—can hardly justify its use, and it is hoped that its dangers may be more widely appreciated.

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Reviews

A HISTORY OF PHTHISIS

The Story of Clinical Pulmonary Tuberculosis. By Lawrason Brown, M.D. (Pp. 411. $2.75 or 15s.) Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1941.

Dr. Lawrason Brown died in December, 1937. His was a name to conjure with in the American tuberculosis world. Tuberculosis claimed him from the moment when as a medical student and patient he came under the influence of Trudeau at Saranac Lake. His personal misfortune, as someone put it, was translated by Lawrason Brown into a life of lasting benefit to mankind, and placed his name among those of the few great leaders who have inspired and guided the successful campaign for the control of tuberculosis. In 1900 he took charge of the now famous Trudeau Sanatorium, and "changed our whole conception of a sanatorium from that of a mere home where patients lived in the open air to that of a well-organized centre where patients are given the highest type of medical and social aid, and where, through constant stimulation of its staff to clinical and laboratory research, the quality of this service is undergoing continual improvement." This alone would place much of humanity in his debt; *The Story of Clinical Pulmonary Tuberculosis* adds to this debt. This is no comprehensive or "standard" history of tuberculosis, nor is it likely ever to be labelled "classical"; but its study will help to broaden and humanize the outlook of tuberculosis workers. It is not a book to read from cover to cover and put aside as a reference work that is in fact seldom referred to, but it is a volume to place on a handy shelf and dip into again and again—it will not fail to give pleasure, for the full description of "human" details carries us so effectively into each period discussed. But it should be added that the quality and style of the book are distinctly patchy. This was, unfortunately, inevitable. It had been Lawrason Brown's intention to make into a book, with the addition of other chapters, the lectures on the history of tuberculosis which he had delivered for many years to the students of the Trudeau School of Tuberculosis. Failing health prevented him from accomplishing this. Only after his death was it decided to carry out the original plan as far as possible, and Mrs. Brown undertook the task. The first six chapters, undoubtedly the best in the book, are, we are told, the lectures as he delivered them, with most of the lecture flavour removed, some rearrangement of material, and repetitive matter where periods overlap eliminated as far as possible. In three of the chapters a fascinating attempt is made to depict the visit of a tuberculosis expert to his patient at different periods—in 1700, in 1800, and in 1900. Dr. Lawrason Brown had intended to make also a tour with the expert of 1930, but this was never written.

There are chapters on "Laennec and his successors and the beginnings of early diagnosis," on early publications in Germany and Austria, on the diffusion of knowledge in England, and on diagnosis in America. This last chapter contains a great deal of repetition, chiefly long quotations from the statements of various prominent specialists concerning auscultation and percussion signs in "early tuberculosis." The chapter on diagnosis by *x* rays is written by Dr. Homer L. Sampson of the Trudeau Sanatorium. That on artificial pneumothorax is entirely from Lawrason Brown's notes which were to form the basis of it. They were arranged chronologically and allowed to stand practically as written. Included are also chapters on Laennec and his early writings, on the story of the stethoscope, and

on early medical journals. Finally, Edward W. Archibald, with whom the tour with the tuberculosis expert of 1930 was to have taken place at Montreal (but why a surgeon, however eminent?), contributes a full and illuminating account of the development of surgical methods in treatment.

Considering the amount of "meat" in this volume, most of it of excellent quality, the price is modest. For it is a book to buy and to possess, and not merely one to borrow.

A SURGEON'S SPIRITUAL ODYSSEY

Diagnosis of Man. By Kenneth Walker. (Pp. 255. 10s. 6d. net.) London: Jonathan Cape. 1942.

Mr. Kenneth Walker's literary output has ranged from the strictly technical to children's books, but each has clearly borne the impress of his personality. His *Diagnosis of Man* is in effect a record of his own spiritual Odyssey. After a consideration of cell-structure and the factors influencing the development of different human types, he goes on to a description of the brain and central nervous system and a discussion of the difficult, if not insoluble, problem of the interrelationship between brain and mind. The inadequacy of scientific methods alone to determine this is pointed out, and a chapter is devoted to the different paths of truth. A study of varying stages of consciousness leads to the conclusion that, while he does not expect a psychological evolution on similar lines to that which has occurred in physical structure, he does believe in the capacity of the mind to reach higher stages of consciousness—for instance, by the aid of yoga. This naturally leads to a comparison between Oriental and Occidental modes of thought, and he leaves the reader in no doubt as to which he prefers. In the writings of a mystic like Plotinus and a philosopher such as Bergson he finds many analogies with the Oriental. And so we go on to a comparison between certain religions which he regards as so different in their accessories but so similar in essence. Attention is called to the resemblance between the stories of the birth and early life of Buddha and of Christ, with reasons for regarding these as being more than merely coincidental.

It must be admitted that the gulf between East and West still remains wide, and that to many Western people the language of the Vedanta appears difficult and obscure; nor does the author suggest that higher states of consciousness are easily acquired. Just as, physiologically, there is a difference between the life of external relations and that of the internal, so there is a difference psychically: the Occidental concentrates on the external, the Oriental on the internal. Which method has most influence on conduct the author does not discuss, but he is clear as to which tends the more to internal peace. That we have much to learn from Eastern philosophy and religion is doubtless true; what is more doubtful is whether the resulting Eastern standard of conduct is higher. Nevertheless, Mr. Kenneth Walker has written a thought-stimulating book which, towards the end, reaches heights that are helpful and refreshing amid our present discontents.

INJURIES BY ACCIDENT

Accidental Injuries: The Medico-Legal Aspect of Workmen's Compensation and Public Liability. By Henry H. Kessler, M.D., Ph.D., F.A.C.S. Second edition, enlarged and thoroughly revised. (Pp. 803; 202 engravings. 45s. net.) London: Henry Kimpton. 1941.

Industrial countries which possess reasonably planned systems of workmen's compensation think of compensation in terms of an attempt to protect, treat, and rehabilitate the injured workman. This country, almost alone among great nations, neglects the problem of industrial injury and is contented to make the workman who is injured at his work, or his widow, sue the employer for an inadequate weekly allowance. Those medical men and lawyers who read Dr. Kessler's book will inevitably suffer a consuming envy at the picture it gives of a constructive and intelligent approach to the problem. As the author points out in his preface, in Canada and the United States workmen's compensation is largely administered by special tribunals called Compensation Boards or Accident Commissions. These fix rates, pay compensation, and decide all questions relating to the administration of the scheme, including the relation between injury and disease, the determination of the period of temporary disability, and the evaluation of permanent disability. This book is intended to help the physician to interpret these medico-legal problems, and is the distilled practical experience of its author as medical director of the New Jersey Rehabilitation Clinic and the New Jersey Workmen's Compensation Bureau for twenty years. The hundred thousand or so cases upon which he worked during that time included every type of traffic accident, and injuries suffered in industrial plant of every variety.

The book begins with a short summary of the history and basis of American compensation law and the aims of rehabilitation, but the bulk of the work is medical and therefore is as valuable and informative to physicians in this country as in any other. Its precise study of schedules for rating disability are unfortunately of little use here, but every practitioner concerned with the treatment of accidents will find the volume invaluable for constant reference. Its clinical classifications will enable him to relate any given case at once to the appropriate part of the book, and there he will find clearly presented the main considerations on which he must form his opinion. The chapter on accident neurosis is an adequate summary of a difficult subject; the section on industrial disease and poisoning supplements from this special point of view the existing lengthy studies of toxicology in which our medico-legal literature is so rich. The final section, on rehabilitation, contains some interesting illustrations of special cases but does not do justice to this very important aspect of compensation, and a future edition might profitably include more detailed advice on occupational and diversional therapy and vocational training. The book fills a wide gap in the literature and may be warmly recommended.

Notes on Books

The ninth edition of *Diseases of Women*, by Dr. HARRY STURGEON CROSSEN and Dr. ROBERT JAMES CROSSEN, is published at 63s. by Henry Kimpton. For nearly thirty-five years this textbook has faithfully recorded the progress of gynaecology in clearly written, well-arranged, and beautifully illustrated chapters. The new edition now before us has been entirely revised and reset; it includes much new material and no fewer than 145 new illustrations. It fully maintains the high standard set by its popular predecessors.

Messrs. Adam and Charles Black have now published the ninety-fourth edition of their annual biographical register *Who's Who*, which began its long and useful career as *Men and Women of the Time*. The issue for 1942 contains an unusually large number of changes of addresses, and in addition to many new entries thousands of important revisions have been made in the biographies that appeared in previous years. The general standard of production is fully maintained and reflects great credit on the editorial staff and printer's readers who prepare the entries and see the whole work through the press. This new edition of *Who's Who* contains approximately 40,000 concise biographies of living people

arranged alphabetically in double columns in some 3,450 pages. It remains an indispensable work of reference in libraries, clubs, editorial and other offices, and public institutions. The price in buckram binding is 70s., an advance of only 5s., notwithstanding the greatly increased and still increasing costs of production in wartime.

The U.S.S.R. Society for Cultural Relations with Foreign Countries has collected in a pamphlet some of the greetings which have been exchanged between this country and the Soviet Union. Included are messages, on the one hand, from the Royal Society, Cambridge University, and Cambridge scientists, and on the other from the Academy of Sciences of the U.S.S.R. and from a large number of individual members of the Academy, among them Prof. A. D. Speransky, director of the department of general pathology of the Institute of Experimental Medicine, Prof. V. I. Vernadsky, director of the Radium Institute, and Dr. L. S. Stern, director of the Institute of Physiology.

Preparations and Appliances

STRETCHER FOR MOUNTAIN CASUALTIES

Mr. D. G. DUFF, *M.C.*, F.R.C.S.Ed. (Denbigh), writes:

The handling of casualties whether in climbing accidents or in mountain warfare presents special problems which deserve more consideration in these days when we wage war in so many different conditions of terrain and climate. Not only may injuries be very severe in the first place, but the chances of making them very much worse by unskilled splinting and carrying are correspondingly greater. Patients may lie out in cold exposed positions for many hours, and the journey to safety may be dangerously long-drawn-out if suitable apparatus is not to hand.

It would appear from data in some of our interesting picture papers during recent years that enemy armies—German, Austrian, Italian, at least—have carried out experimental work among snow-clad peaks, and have developed stretcher methods suitable to these conditions. Mountaineering associations of England and Scotland, too, have been fully alive to the fact that special methods are needed. Their first-aid committee of representatives from various clubs, under the chairmanship of Dr. C. Paget Lapage of Manchester, has considered the problems and set up depots of the necessary equipment at strategic points in our hill districts. A Scottish committee too has been active, and, among other methods, that used in the South African hill country, which employs for transport a rigid board mounted on a one-wheeled undercarriage, has been considered.

It is generally agreed that a stretcher of sledge type is quite essential not only where snow or ice covers the ground, but also in getting casualties down from exposed rock faces. With the sledge-stretcher the labour of carrying down slopes of heather or grass or scree is wonderfully lessened. The shock from jolting and the time spent in getting to safe shelter are much reduced. Various stretchers have been tried. An ordinary Furley stretcher with telescopic handle has been fitted with sledge runners in place of wheels. This type will usually be too heavy and too easily damaged. Wooden sledge-stretchers with metal fittings require for their making a co-ordination of craftsmanship which is not now easily obtainable. Tubular steel stretchers are more easily and cheaply made. Duralumin would of course be ideal, but it is dear and difficult to obtain.

I have previously described (September 10, 1938, p. 573) a special type of transverse bar which can be quickly screwed to any wooden stretcher, and which will allow a Thomas splint to be used in vertical positions. This has been tested and approved by the Mountaineering First-aid Committee. Subsequently an all-metal collapsible sledge-stretcher with chain-link wire bed was made for the Scottish Mountaineering Club, but outbreak of war has prevented its testing. A further tubular steel stretcher just made perhaps merits description; the difficulty in obtaining the required material has meant that it is somewhat heavier than was hoped.

This *collapsible* sledge-stretcher has a stout canvas bed which is removable for cleaning (or possibly decontamination). A broad belt splints the patient firmly on the stretcher bed, and crutch straps attached below this may be used for support in vertical positions. A tubular transverse bar at foot end serves as a foot-rest when the stretcher is vertical, as well as adding rigidity when the stretcher is "prepared." It carries hooked clamps which grip the bottom of one or two Thomas splints, so that even with fractured legs the patient may be carried in any position up to the vertical in comparative comfort, sitting in the ring of the Thomas splint as in a calliper. The requisite "play" is allowed in horizontal positions. Following the practice of the mountaineering associations, telescopic handles extending out for twenty inches and yokes for side-bearers are incorporated, for experience has shown that six bearers are necessary.

Thomas splint in position.

Side yokes loosened.

Originality may, I think, be claimed for this cross-bar design, which allows the use of a Thomas splint in vertical positions. The form of traverses, and runners too, are so far as I know new. Except for the canvas there are no normally detachable parts.

For efficient stretcher work in mountain country special training as well as special apparatus is required. Practice will reveal many points of difference from ordinary bearer work. Rough ground needs extra care. Progress is often best in crab-fashion with the stretcher diagonal to the line of advance. Proper organization of relays of bearers and more efficient wrapping up of the patient to prevent shock are important. It would, I am sure, prove enlightening if Army authorities were to inspect the very efficient arrangements and equipment for first aid provided by the mountaineering associations. Mr. Wilson Hey, F.R.C.S., of Manchester is now chairman of their First-aid Committee. Other services too might profit.

AZOZOL

Boots Pure Drug Co., Ltd., are now preparing azozol, also known as hexazole, as a British preparation equivalent to the German preparation azoman, a cyclohexyl derivative of triazol. This substance has the same action as leptazol, *B.P.*, better known under the proprietary name of cardiazol, and can therefore be used in the treatment of schizophrenia by producing convulsions, or as an agent to awaken those in too deep narcosis or in barbiturate poisoning. Azozol can be given intramuscularly as well as intravenously, which is an advantage, but it cannot be given more than once at a time in treating schizophrenia when no fit results, as leptazol can. Presumably this warning applies to its use in narcosis, and if so, its use for that purpose can be neglected as it is essential to be able to give repeated doses. Picrotoxin remains the best substance for that purpose, and full doses can be given hourly with safety and certainty of success.

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MEDICINE AT WAR

The difficulties with which medicine has been faced in the present war—and, it may fairly be added, its relative failure to overcome them—are of interest in that they represent in a microcosm the experience of the democratic peoples as a whole in this struggle. They are the difficulties of conservative organisms in adapting themselves to the radical changes which science has made in their environment. The problems of the war as a whole are, in the spiritual sphere, the creation of a faith for which men are prepared to live and die; and, in the material sphere, the co-ordination of the needs of the factories, the farms, and the fighting Services. It is easy enough to criticize the mistakes made in these spheres by our statesmen and soldiers, but if we look at our own profession in the mirror we may be more charitable though not less insistent in demanding improvement.

The medical problems of the last war were obviously medical problems, and the Medical Research Council found itself in their solution. Trench fever, trench mouth, trench nephritis, spirochaetal jaundice, gas-poisoning, enteric, and dysentery—all these clearly belonged to medicine and were susceptible to attack by the familiar methods of clinical investigation, pathology, and bacteriology. The obviously medical problems of the present war have been equally well handled. We have due cause for pride in the treatment of war casualties, the application of the sulphonamide drugs to war wounds and epidemics, the improvement in the transfusion of blood and blood substitutes, the special centres for injuries of the face, the thorax, and the nervous system, the work of the emergency public health laboratories, and medical advice on food policy, to mention only a few of the things that come to mind. Wounds and epidemics, however, have not been the most important results of enemy action, and we have been less well equipped or prepared to deal with broken homes, shelter life, evacuation, and war shifts in population density. The problems raised by intensive work in the factories were not all solved in the last war. The black-out and transport difficulties, the problems of leisure and expenditure in face of a growing shortage of consumer goods, the enrolment of women in the Services, the employment of married women with young children—all these are to a large extent new problems with a medical aspect. It may be true that in wartime we cannot have both guns and butter, but it is not clear that the cost and reward of sacrifices are always nicely calculated. Any man looking at the queues at the bus stops and hearing the chorus of coughs and sneezes in the evening surgery may well wonder whether economy in road transport has not been too dearly bought, but then he may equally reflect that the same queues will wait outside the tobacconist's shop.

The correspondence columns of the medical journals frequently contain letters from medical officers in the Services who complain that they have no medical work to do. It is quite true that on some occasions and in some places wasteful use has been made of a medical officer's time. It may also be true that those who complain that they have no medical work to do have a wrong conception of what medical work should be. Behind this complaint often is the fact that the doctor is not seeing enough "cases" and is not having sufficient opportunity to keep his diagnostic wits sharpened. This attitude on the part of the doctor has of recent years come under increasing criticism from the lay public, many of whom realize that what they really want from the medical profession is not so much the treatment of established disease as advice and instruction on healthy living. In the Services the medical man's first job is, to use a familiar phrase, to keep the fighting men fit. That it may take him some time to realize this, and that he is not always well equipped for the task, are a reflection upon the education a student receives in his medical school. It is common knowledge that much of the war material that has been designed by our engineers and physicists imposes a heavy strain on the human organism. However mechanically perfect, a bomber which exposes the crew to excessive cold or oxygen deprivation, a tank which is unduly noisy, with vitiated atmosphere, or a submarine in which the CO_2 rises above physiological limits, cannot be an efficient war machine. It is for the doctor to say this, and at present he has far too few channels by which to make his voice heard. It is only doctors, too, who appreciate the fact that, whereas machines may be mass-produced to type, mankind is infinitely variable. A half-sighted piano-tuner may be very good with an Asdic submarine detector, but he will be very bad on look-out at night. The job he can do well will make him happy and resistant to war strain, whereas as a misfit he will be a grumbler and a drain on the morale of his unit. However fit and virile a man may be, it is useless to employ him with parachute troops or a commando if he gives a history of being queasy on the swings and sea-sick whenever he made the crossing from Ilfracombe. This is the task of occupational selection, which has been applied so tardily and in so limited a sphere. These few examples are enough to illustrate the difficulties of medicine in the present war. The new problems are not obviously medical problems. They lie on the borderlands of medicine and sociology, of medicine and psychology, of medicine and physical invention.

Remedies are not easy to suggest. The first and most essential is the faith that it is in the borderlands, and not in the well-explored fields, that great discoveries are made. It is difficult sometimes not to feel that our medical education is producing men who are able to recognize diseases about which they have been taught but are quite unable to recognize and isolate new problems. Whatever the strain of war, a sufficient number of young men should receive a training in methods of investigation, so that they can recognize and attack prob-

lems scientifically and know how to use the literature and advice that are available. Then we must firmly establish the principle that any machine which is controlled by human hands, whether in the factory or in the field, presents a biological problem and must be subject to biological approval. The doctor, whether he be physiologist, psychologist, clinician, or pathologist, must advise at every stage of initiation, development, and application, and not merely be consulted when things have gone wrong. The medical officer in the Services should take a more intimate part in exercises at home, and selected observers should more frequently accompany the men into action to devise new methods of relieving the strain to which they are exposed in the war of machines. The civilian practitioner, who sees what is happening in the home, the crowded billet, and the factory, is one of the custodians of the national morale, and his voice should be more often heard, discussing the things he has seen and suggesting remedies for any wrong. This war is qualitatively different from the last war. It is not an engineers' war, it is a total war, to which each must contribute according to his gifts. Our task will not be an easy one. We have always had to face opposition when we have entered new fields to apply the principle that the prevention of disease is the first duty of the medical profession. Advice on the working of our factories and the design and application of war equipment is just as much the business of medicine as the control of malaria or the treatment of venereal disease, and is an equally essential contribution to the preservation of the health and efficiency of our people in this struggle.

FUNDUS OCULI IN CARDIOVASCULAR DISEASE

There is no general agreement as to the pathology or the significance of fundus changes in various cardiovascular disorders. For many years ophthalmologists held that no clinical distinction was possible between most forms of "albuminuric retinitis" and diabetic retinitis, though a star figure at the macula was regarded as pathognomonic of nephritis. The isolation of arteriosclerotic retinitis as a distinct entity expanded our knowledge but only worsened the confusion, for yet another clinical picture was added to the two previously known, without at the same time supplying criteria for differential diagnosis. In fact, it was generally assumed that the three types of fundus lesion were all conditioned by retinal arteriosclerosis. Histologically there is no convincing evidence that the three fundus lesions are pathologically distinct, and yet clinically the diabetic fundus lesion has generally a characteristic stamp. Accumulated observations have shown not only that "albuminuric retinitis" was a misnomer—for the association with albuminuria was by no means distinct—but also that the appearances are an expression of generalized arteriolar sclerosis involving the retina as well as other tissues. This is probably also true of diabetic retinitis and to some extent of arteriosclerotic retinitis, and on this unifying conception it is difficult to see why the prognosis as to life should be more serious in renal retinitis than in the other two. The presence of oedema in renal retinitis suggests either that there is an additional factor or that the process is much more acute, and the accumulation of quantitative differences leads to a qualitatively different state. That the latter explanation may be correct is suggested by the negative biochemical evidence for an additional factor in renal retinitis, and by the isolation of the so-called "malignant hypertension," in which oedematous reactions of the retina are also seen and prognosis as to life is as grave as it is in renal retinitis.

Along with these still obscure ophthalmological problems there is the wider problem, now much clarified, of the exact classification of the various types of nephritis and of essential hypertension. One fundamental difficulty arises from the fact that the retinal vessels cannot altogether be regarded as a mirror of the arterioles elsewhere in the body, if only for the reason that their supply of sympathetic fibres is scanty and that they therefore contract less in response to sympathetic stimulation or irritation. In this respect the retinal arterioles are more like those in the brain, and the clinical recognition that cerebral arteriopathy may exist without wide general involvement may perhaps also apply to the retina. Although the retinal vessels may not be involved in some cases of generalized arteriosclerosis, the evidence that retinal arteriosclerosis may exist by itself is less convincing; it is possible that no obvious general involvement can be detected at the time the retinal changes are observed. The physician is in no doubt about the meaning of retinal changes in a case of established general disease, but little is known of the significance of such changes in patients who are apparently well.

On the whole, ophthalmologists have lagged behind general physicians in these investigations, and the mass of work done in measuring retinal blood pressure with the ophthalmodynamometer has not taught us much. Such measurements may be a valuable indication of the state of the cerebral circulation, but they do not tell much more than the sphygmomanometer does. Measurement of the calibre of the retinal arteries is difficult, and judging by the work of Koch[1] the mean values obtained in a series of examinations were not consistent enough to warrant their use for clinical classification of patients with diffuse arteriolar disease. While the significance of a relatively isolated retinal arteriosclerosis has still to be assessed, the main problem to-day is to find out how to distinguish spastic from organic lesions of the arterioles of the retina. The problem obtrudes itself especially in cases of toxaemia of pregnancy. The dividing line between spasm of arteries and organic constriction is far from clear. The distinction is important. Wagener and Keith,[2] for example, have shown that women whose pregnancy was terminated before the establishment of organic retinal changes were not likely to suffer subsequently from essential hypertension; the converse is true of women who show organic changes at the time of termination of pregnancy. Much yet remains to be done. For example, recent observations by Ballantyne[3] and by Black[4] on unusual types of retinal haemorrhage remind us how even to-day the ophthalmoscope is still a neglected instrument.

1 *Arch. Ophthal.*, Chicago, 1941, **26**, 565.
2 *Trans. XV Internat. Ophthal. Congress*, Cairo, 1938, **1**, 45.
3 *J. Obstet. Gynaec. Brit. Emp.*, 1941, **48**, 206.
4 *Brit. J. Ophthal.*, 1941, **25**, 424.

ROAD ACCIDENTS IN WARTIME

Even before the war about 40% of all fatal accidents were due to road traffic, and the material wastage then caused by road accidents has been estimated at £20,000,000 a year. Since the war began the frequency of road accidents has increased alarmingly. During the first twelve months the total was 25% higher than in the year before the war; during the second twelve months it increased by a further 20%, and the number of persons killed was just over 10,000. The number of persons injured presumably increased in proportion, but no statistics are available for the whole country. Dr. H. M. Vernon, in his excellent little summary, *Road Accidents in War Time* (Cambridge: Heffer and Sons, 3s. 6d.), gives the black-out its due, but notes that the casualty rate did not decrease in the summer months when the black-out hours were shorter, and that other special causes have therefore to be looked for. Military drivers as a class have been exonerated as an outstanding cause of accidents, but explanations put forward in a leading article in the *Times* on June 25, 1941, included faster driving on emptier roads and the larger number of elderly cars with poor brakes and other defects. The heavy casualties among children, said the leader-writer, might be due to less careful supervision and instruction, the authorities concerned having many other things to think about. Leniency in enforcing the law against the driver has been alleged as a cause. A White Paper published by the Ministry of War Transport on November 11, 1941, concluded from evidence of different kinds that since the war there has been a serious deterioration in road behaviour by all classes of road users, largely because of the wartime attitude of "living dangerously." Other probable factors, according to a White Paper, are preoccupation brought about by war strain, anxiety to complete a journey as quickly as possible, and exasperation due to delays caused by war conditions. Carelessness is still the main cause of accidents in war as in peace, but the results are accentuated by black-out conditions. The increase in the number of fatal accidents is attributed to the rise, in the black-out, of the "completely unexpected" type of accident, and to the higher proportion of comparatively heavy traffic. Dr. Vernon rightly lays stress on what Lord Alness has described as the incredible apathy of the public mind. He regards as a very important remedial measure a plan of education and propaganda which shall induce everyone to realize, unconsciously even more than consciously, the need for alertness and attention. Such a system must begin with young children in the home and the school. A good deal has been done, but the stimulus must be continuous and must be backed by disciplinary measures. An elaborate ballot taken by the Royal Society for the Prevention of Accidents showed a considerable majority in favour of a speed limit all over the country during the black-out. A very large majority agreed that traffic signs ought to be better illuminated at night. The delegates approved almost unanimously of many regulations for pedestrians—such as prohibiting them from walking in a carriageway if a footpath is provided, and obliging them to walk on the right-hand side of a carriageway which has no footpath, and on the left-hand side of a footpath. The lighting and marking of crossings, kerbs, and obstructions was strongly supported. The authorities, according to the White Paper, are not being by any means idle. Cycle rear-lights have been made compulsory, two masked headlamps have been allowed on cars, and a reduced form of lighting has been adopted by a number of local authorities. The marking of road islands and other obstructions with lights and paint has been encouraged, and a twenty-mile-an-hour speed limit is enforced in built-up areas. A special road-safety campaign has been conducted throughout the winter, and steps have also been taken to improve the maintenance of vehicles and the standards of driving.

OXYGEN IN THE TREATMENT OF SHOCK

The last two years have inevitably brought a succession of papers on the aetiology and treatment of traumatic shock. So long as the precise mechanism of this condition remains obscure, it is unlikely that entirely successful therapy will be available. For instance, considerable disagreement as to the value of oxygen administration has been expressed by those dealing with casualties. The same disagreement is present in much of the literature on experimental shock in animals. H. A. Davis[1] describes disappointing results with oxygen therapy in shock secondary to haemorrhage in dogs, while Schnedorf and Orr[2,3] consider that oxygen inhalation is a valuable adjunct in the treatment of shock after haemorrhage or of lowered blood pressure due to slow intravenous injection of histamine. H. A. Davis obtained the most satisfactory response in animals with mild haemorrhagic shock, but found oxygen useless in animals in which the blood volume was still falling at the time of administration and in which haemoconcentration was present. He considers that if the blood volume is already reduced, but no further fall occurs, oxygen may have the effect of stabilizing the lowered blood pressure and preventing its further fall until other forms of therapy are available. Schnedorf and Orr produced an extremely low blood pressure in dogs by the slow intravenous injection of histamine. The administration of 100% oxygen prolonged the lives of the treated dogs by 71% as compared with the dogs breathing atmospheric oxygen (21%). Anoxaemia due to failing circulation, they hold, depressed the capillary tone and also the pressor reflex activity of the carotid sinus. This was restored by oxygen. They claim the same satisfactory results in shock after loss of blood. Dogs treated by inhalation of 100% oxygen not only tolerated a 15% greater blood loss than the control dogs, but also lived longer. The actual protocols of their experiments are not perhaps as striking as their conclusions. On the basis of the experiments recorded in these three papers the conservative view of Davis regarding the value of oxygen therapy appears to be justified.

BEHAVIOUR OF BACTERIA IN THE CHICK EMBRYO

Sixty years ago, when bacteriology was in its infancy and the primary problem requiring solution was how to grow bacteria outside the body, it was proposed to inject bacteria into eggs incubated at 37° C. Ogston, in an article[4] in this *Journal* in 1881, stated that he found that a number of different bacteria would grow readily in the incubating egg. With the discovery of broth and agar the suggestion was forgotten, and it was not till 1931 that Woodruff and Goodpasture[5] showed that inoculation on to the chorio-allantoic membrane of the developing chick embryo provided a useful means of studying the growth of viruses. Injection of viruses and rickettsiae into the developing chick embryo is now a well-recognized technique, but it is not so generally realized that the method is one well adapted to the study of bacteria. When introduced into the embryo by one of the several available routes of entry each type of organism

1 *Arch. Surg.*, 1941, **43**, 1.
2 *Surg. Gynec. Obstet.*, 1941, **73**, 301.
3 Ibid., 1941, **73**, 495.
4 *British Medical Journal*, 1881, **1**, 369.
5 *Amer. J. Path.*, 1931, **7**, 209.

apparently behaves in its own peculiar manner, and the reactions of the embryo to its presence are characterized by the development of lesions distinctive for the particular infection. Buddingh and Womack[6] have recently studied the behaviour by this technique of five types of bacilli which for various reasons have been considered to be closely related to each other: these organisms are *Bacterium tularense, Brucella suis, Br. abortus, Br. melitensis,* and *Pasteurella pestis.* All these bacteria were found to exhibit varying degrees of facultative intracellular parasitism, especially in the case of *Bact. tularense* and the Brucella species. *Bact. tularense*, however, had a strong affinity for growth within ectodermal epithelial cells. The particular strain of *Br. melitensis* studied was also limited in its intracellular growth to ectodermal epithelium. *Br. suis* and *Br. abortus* showed much less inflammatory reaction and differed in their selectivity for cells of mesodermal derivation, and especially in their effect on vascular endothelium. *Pasteurella pestis,* on the other hand, finds an intracellular environment inimical rather than favourable to its growth, and is adapted to rapid proliferation and spread in the intercellular fluids.

The fact that *Bact. tularense, Past. pestis,* and the various strains of Brucella have selective affinities for different types of cells is certainly of pathological and may well be of epidemiological significance. Although tularaemia has often been designated as a "plague-like disease" there is at present no agreement regarding the systematic position of its specific organism. Bergey,[7] for instance, classifies it as a Pasteurella, and this designation has been accepted by Holmes[8] and others. Serological, cultural, and other considerations have led Francis[9] to place it in a semi-independent position as *Bacterium tularense.* Topley and Wilson,[10] on the other hand, believe that it should be assigned to the Brucella group. Although observations such as those here mentioned cannot be regarded as constituting a basis for classification, they indicate that in its relation to the host cell the behaviour of the causal organism of tularaemia is much more like that of the Brucella group than of *Past. pestis.*

The technique of injecting bacteria into the developing chick embryo should serve to bring out differences in behaviour which may explain variations that occur in the natural disease as a result of infection with different strains of the same micro-organism.

SILVER AND GOLD IN THE BODY

In a paper on the absorption and excretion of various elements in the human body Kent and McCance[11] have studied not only silver and gold but also lithium, boron, and vanadium. Prolonged balance experiments were made in which the intake and output were analysed by spectrochemical methods in the Department of Physical Chemistry at Cambridge. The amount of an element present was determined by the intensity of its most sensitive spectral line, which was measured by a microphotometer, in comparison with the intensity of an adjacent line produced by another element, such as Mg or Fe, added in known quantity for the purpose of this comparison. Observations on the excretion of silver were made on a woman suffering from generalized argyria caused by washing out her nose for many years with an organic silver preparation. Although saturated with silver, it was found that she was excreting very little—about 1.5 mg. per week, which was found in the faeces. Even this may have come from the desquamation of cells lining the intestines, as the proctoscope showed staining in the visible parts of the rectum and lower bowel. Evidently when silver has found its way into the body it stays there. Observations on the excretion of gold were made on a patient who was receiving intramuscular injections of aurothioglucose suspended in oil. She had had 500 mg. of gold previously and 50 mg. in the week of examination; nevertheless the total amount excreted was no more than 7 mg. per week, four-fifths being excreted in the urine and the rest in the faeces. The excretion of gold is a matter of obvious importance on account of its medicinal use, and, although it is not retained in the body in the same way as is silver, attention should be paid to the ease with which it accumulates when repeatedly injected.

Kent and McCance found that lithium salts were rapidly excreted in the urine, as might be expected. Lithium in the food, however, was not, a large part of it remaining unabsorbed, especially that in brown bread. Boron taken by mouth as boric acid was rapidly excreted in the urine, as was also 92% of boron present in foods. Finally, the authors found that when vanadium in the form of sodium tetravanadate was administered intravenously to normal persons in six daily doses, 81% was excreted in the urine within seven days of the last injection, and 9% was excreted in the faeces during the same time. These careful studies which Dr. McCance diligently pursues form a most important contribution to our knowledge.

A TYPHUS FEVER PANEL

The lack of opportunity of the medical profession in this country to become familiar with typhus fever has in the past not infrequently resulted in a mistaken diagnosis with consequent failure to take prompt preventive measures. In the circumstances the Minister of Health proposes, if possible, to form a panel of eight or ten men who have had clinical experience of the disease, established in different parts of the country, who would be willing on occasion to assist in diagnosis in and about the districts in which they live. A number of suitable men are available in London, Lancashire, Yorkshire, and the North Midlands, and the Chief Medical Officer of the Ministry would be grateful to hear from medical men or women in other parts of England and in Wales who have had the necessary clinical experience and who are willing to allow their names to be put on the panel. A fee of five guineas and out-of-pocket expenses will be paid by the Minister if and when any member of the panel is called upon to act.

We regret to announce the death at Roehampton Hospital of Dr. Herbert Lightstone, D.S.O., M.C., Director-General of Medical Services, Ministry of Pensions; and of his predecessor, Sir John Hebb, C.B., C.B.E., who was seconded to the Ministry of Health in 1938 to organize the Emergency Medical Service.

Surgeon Rear-Admiral G. Gordon-Taylor will deliver the Bradshaw Lecture before the Royal College of Surgeons of England at the College (Lincoln's Inn Fields, W.C.) on Thursday, February 26, at 2.30 p.m. His subject is "Abdominal Injuries of Modern Warfare."

[6] *J. exp. Med.*, 1941, **74**, 213.
[7] *Manual of Determinative Bacteriology.* By H. Bergey. 5th ed. 1939. Baltimore: The Williams and Wilkins Company.
[8] *Bacillary and Rickettsial Infections.* By W. H. Holmes. 1940. New York: The Macmillan Company.
[9] *J. Amer. med. Ass.*, 1928, **91**, 1155.
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NOTES ON THE VALUE OF TUBERCULIN-TESTING IN A RURAL DISTRICT

BY

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Following upon its discovery towards the end of the last century, tuberculin was extensively employed as a diagnostic agent. As the difference between infection and disease was not at first understood, its use led to numbers of healthy people being placed in sanatoria as the result of a positive reaction; and, indeed, it was suggested in the Tuberculosis Regulations of 1912 (England) that notification should not be made solely as the result of a positive tuberculin test. However, it was soon realized that whereas infection from tubercle bacilli was widespread, it was relatively seldom followed by disease, and the knowledge that a positive reaction was of no great diagnostic importance in an adult tended to undermine its value in clinical medicine, with the result that the use of the tuberculin test became limited, and was mainly confined to children.

Literature of Tuberculin-testing

This belief in a widespread infection by the tubercle bacillus is held as the result of various tuberculin surveys, some of the best known being those of Hamburger in Vienna, Calmette (1913) in Lille, and Fishberg (1932) in New York; the incidence of tuberculous foci found in necropsies supports the results of these surveys. These investigations were made in clinics and out-patient departments on people who for the most part lived in densely populated areas and whose standard of living was low. These limitations introduced the factor of selection, and the results—indicating an almost universal sensitivity to tuberculin by the time adolescence is reached—are consequently misleading, since they refer to a section of the community which by force of circumstances is peculiarly liable to infection. They are certainly not applicable to rural areas. The work of Heimbeck (1936) in Norway and Holm (1937) in Denmark on nurses and students aroused fresh interest in the value of this test, and more recently high percentages of nurses and university students in the U.S.A. were found to be Mantoux-negative.

A high percentage of positive reactors in a community indicates a large number of "open" cases or a contaminated milk supply: in either case dissemination of the infection will occur more readily in urban than in rural districts. As recognition of the early cases becomes more frequent through the examination of contacts and the increased use of radiography, and as institutional segregation and collapse therapy reduce the numbers of open cases which are "at large" in the community, there will be a corresponding reduction in the sources from which the infection may be contracted. We should therefore expect that in the future there will be a higher proportion of negative tuberculin reactors and an increase in the average age at which the primary infection occurs. The energy with which the bovine source of infection is attacked will be an important influence in reducing the number of positive reactors: this factor will vary in efficiency from the system of slaughtering tuberculin-positive cattle, as is done in the U.S.A., to the masterly inactivity which this problem encounters in Ireland.

The Present Test

Routine tuberculin-testing was started two years ago in this county, and below are tabulated the results, in their respective age groups, of such tests carried out on 151 people, all of whom were considered by us to be free from active tuberculosis.

	0–5 Years	5–10 Years	10–15 Years	15–20 Years	Over 20 Years	Total
Positive ..	4 (17%)	10 (30%)	18 (49%)	7 (44%)	28 (67%)	67 (45%)
Negative ..	19 (83%)	23 (70%)	19 (51%)	9 (56%)	14 (33%)	84 (55%)
Total ..	23	33	37	16	42	151

The routine adopted was: (1) percutaneous test with Hamburger's (forte) ointment; (2) Mantoux 1/100 dilution where no reaction to the percutaneous test occurred.

The percutaneous test was found to be unreliable, and negative results were not accepted unless confirmed by the Mantoux intradermal test. The latter, in our experience, proved reliable when compared with the results of clinical and radiological examination, and of the sputum tests.

These cases, of course, represent a selected group of the population; but, being mostly of the dispensary or "ticket" class, many of whom suffer from insufficient food, and all being referred by a doctor to one of the various tuberculosis clinics as possible cases of tuberculosis, they represent a section of the population which should show the highest proportion of positive reactors: the value of the test as a diagnostic agent would be greater among the more sheltered "private" type of patient. Several of these cases, especially those in the age groups 0-5 and 5-10 years, were referred as possible cases of abdominal tuberculosis, usually showing the vague signs and symptoms associated with this condition: by no other method known at present could this disease have been excluded.

In the age group "over 20 years" it is seen that of 42 new cases, 14 (33%) did not react to the intradermal test, thereby indicating absence of infection. Other experiences in the county would suggest relatively late age onset for primary infection:

(1) Of the 9 deaths known to have occurred in the county during the past year from tuberculous meningitis, 7 were of patients over 15 years: tuberculous meningitis is associated with a progressing primary infection.

(2) Of 8 cases of glandular and 7 cases of joint tuberculosis, only 4 were in children under 15 years old: this form of tuberculosis also is usually associated with a recent primary infection.

The delayed appearance of primary infection, or its absence, might seem paradoxical in a country where tuberculous disease is considered to be prevalent. However, it is possible that this high incidence may be much more apparent than real, based as it generally has been on clinical diagnosis and not always supported by bacteriological or radiological evidence. The lack of *x*-ray facilities does not necessarily mean missed cases, since these will eventually progress to a state in which their condition can be diagnosed clinically, but rather that a person may be designated tuberculous who is in reality suffering from one of the many chest conditions producing similar signs and symptoms; also, opportunities and facilities for post-mortem investigation are very limited in Ireland and are seldom employed.

The wholesale elimination of some families by tuberculosis, as is occasionally seen, is not the result of an unusually high general incidence of disease but of massive infection, in an overcrowded house, maintained by the refusal of the infectious members to receive institutional treatment.

The higher the percentage of negative reactors the greater the value of the tuberculin test as a diagnostic agent; the more rural the locality the more likely it is that such high percentage will be encountered.

The following two case reports are of interest in demonstrating the real value of the Mantoux test in the adult, for without its help most unfortunate mistakes would almost certainly have been made.

Case Reports

Case 1.—A youth aged 17 with a four-weeks history of "chest trouble." On May 7, 1940, the Mantoux reaction was negative. On May 18 the following radiological report was received from a Dublin specialist: "The upper two-thirds of both lung fields are uniformly studded with small nodul · opacities which are extremely suggestive of an early miliary tuberculosis: a film taken in two or three weeks' time would probably show quite definite and typical changes." As a result of this report the patient was put in an observation ward in the county sanatorium, but since it was considered that the negative tuberculin reaction could not be accounted for by "negative anergy," the fatal prognosis which would be inferred from such a report was not given to the relations. In the following month his general condition showed great improvement, his Mantoux reactions remaining negative on two further occasions when tests were made with fresh solutions. The radiological report on August 20, 1940, stated: "Detail is not quite so good owing to respiration, but there is no doubt that both lungs are almost clear. No calcification has appeared, and it seems just possible that the previous condition was a fine bronchopneumonia." His symptoms completely subsided,

his sputum never showed tubercle bacilli, and he is now in normal health and working regularly.

Case 2.—A youth aged 18 with a six-weeks history of cough and pain in left side. On April 5, 1940, the Mantoux reaction was negative. On April 29 the radiological report was as follows: "There is increased opacity in left mid-zone, with enlargement of this hilum. Almost certainly tuberculous. Please re-examine in a few weeks. Right lung normal." On May 17 the Mantoux reaction was negative (with fresh solution). Unfortunately the patient could not be induced to undergo a second radiological examination, and indeed he has refused to be further examined at the tuberculosis dispensary. However, I am informed by his doctor that he is quite free from symptoms and at present is doing strenuous farm work. It is very probable that this also was a pneumonic condition.

Commentary

As a result of these experiences the routine use of tuberculin, especially in rural areas, can certainly be recommended. The decrease in the sources of infection which will result from segregation, better housing accommodation, etc., should be followed by an increase in the number of negative tuberculin reactors in the community, with a consequent increase in the diagnostic value of this test. The new *x*-ray plants which are springing up in various counties will doubtless be used very energetically: the two cases described above will illustrate how even an expert may be mistaken in interpreting radiographs. Radiologists will not be available throughout the country, and the employment of this test may prevent a number of people being labelled "tuberculous" as the result of the interpretation of doubtful shadows on a radiograph in pathological terms.

Summary

The value of the tuberculin reaction (Mantoux test) is discussed in relation to the work of a rural tuberculosis dispensary.

The results of 151 tests performed in Leix are given.

Two adult cases are reported in which the diagnosis was vitally altered by the test.

I am grateful to Dr. MacSearraigh, county medical officer for Laoighis, under whose guidance this work was done, and also to Dr. W. R. F. Collis for supplying me periodically with the tuberculin.

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Reports of Societies

METHODS OF RESUSCITATION IN SHOCK

A joint meeting of the Sections of Medicine and of Surgery of the Royal Society of Medicine was held on January 27, with Dr. GEOFFREY MARSHALL in the chair, for a discussion on methods of resuscitation in shock. The discussion mainly concerned traumatic or wound shock as seen particularly in air-raid casualties.

Routine Measures and Transfusion

DR. R. T. GRANT said that in cases seriously injured, with severe loss of blood, the simple measures of rest, warmth, head-down position, and morphine, while they might temporarily improve the patient's state, were usually insufficient for his recovery. In any case severely injured and suspected of considerable loss of blood, transfusion should begin at an early stage. But the simpler measures should not be neglected even in serious cases. Rest did not mean that the patient should be made to lie still; it meant making him feel as comfortable as possible, getting the examination of his wounds over quickly and smoothly, and allaying his fear and pain. Morphine was given almost as a routine, and he had not seen bad results follow injection of 1/4 grain. Sometimes this had been followed by return of blood pressure to normal levels coincident with relief of pain. But by some patients the drug was not well tolerated and might induce or aggravate nausea or vomiting. Warmth was useful in promoting comfort, but heat must be applied with care and moderation. He doubted whether it was wise to attempt a rapid warming of the patient. The raising of the foot of the bed was a measure always worth trying when blood pressure was low.

With severely injured patients, however, transfusion was also necessary. Here Dr. Grant placed the emphasis on the severity of the injury and the loss of blood rather than on blood pressure. Normal pressure and pulse rate, and even good facial colour, were compatible with much loss of blood. If choice between the two was not restricted by supply, he used blood rather than plasma, because haemorrhage seemed to play so large a part in producing the depressed state of the patient. The amount required for resuscitation varied from patient to patient. The largest amount in his series of cases, called for because of continued bleeding, was 13 pints over a period of 28 hours. Restoration and maintenance of normal systolic blood pressure (100 mm. Hg and over) could be taken as the chief indication that an adequate amount had been transfused. For early transfusions a rate of one pint in a quarter to half an hour was sufficient, and for later transfusions a slower rate—one pint over one or more hours—unless these later transfusions were required to compensate for renewed bleeding. Rise of pressure accompanying a rapid transfusion was not always maintained, whereas with a slower injection the rise continued.

In most cases improvement was pronounced within a few hours of beginning transfusion, but as a general rule, in the absence of continued bleeding, if no improvement took place after giving two or three pints of blood or plasma at an adequate rate, later improvement was unlikely. He added that in his experience operation should be carried out as soon as possible after the patient was revived.

The Phases of Shock

MR. R. VAUGHAN HUDSON said that the military surgeon dealt with the strong and healthy, but the civilian surgeon dealt with trauma inflicted not only upon the normal but upon those burdened with constitutional disturbances such as diabetes and cardiovascular disease. It was self-evident that the close co-operation between physician and surgeon should be maintained in war. War had demonstrated again and again that the apparently weak might survive an injury identical with that which killed his healthy fellow. Two other factors were added in the case of civilian war casualties as compared with peace-time accidents—namely, the incredible dirtiness of the casualty due to debris, and the condition known as "blast."

Shock inevitably accompanied an injury; it was the expression of or the response to an injury. The fundamental changes were manifested by the cortical centres and the vegetative nervous system. The cortex expressed either undue exaltation or confusion and depression, either of which might accompany the changes in the nervous system, which in its turn exhibited a prodromal, an intermediate, and a conclusive phase. These phases might succeed one another with great rapidity. In the prodromal period the compensatory mechanism of the nervous system exhibited its conservatism by a slow pulse and normal blood pressure—a dangerous period, frequently unrecognized or ignored. In the intermediate stage there was early failure of the compensatory mechanism, with a slow pulse and falling blood pressure. In the conclusive stage the pulse rate was rising, the blood pressure low, and circulatory failure established. Shock, therefore, appeared to be a disturbance of the circulatory mechanism. Clinically all these phases were accompanied by coldness, pallor, peripheral spasm of arteries and veins, and tonelessness of tissues. Recovery passed through the same phases, but in the reverse order, though the pulse rate might still be raised in spite of the fact that the blood pressure was within normal limits.

Although whole blood was considered to be the best anti-shock measure, in wartime he had reserved its use mainly for exsanguinated patients, and had employed plasma or in a few cases serum, and these had been highly efficacious. The earliest improvement in the general condition of the patient must be seized in order to treat the wound. Here the speaker described the ideal organization in the reception of injured. In the resuscitation ward a plasma drip should be given to all patients with wounds and to others who were considered likely to need

it, the rate and quantity being controlled by blood-pressure readings. In the anaesthetic room all preparation of the skin was performed under gas and oxygen anaesthesia, preceded by a minimal dose of pentothal injected into the "drip" tubing. In the theatre foreign bodies were removed and the wound was widely decompressed, but dead and dying tissue was sparingly removed. With glass wounds primary suture was often possible, but irregular wounds caused by foreign bodies were left open and packed lightly with vaselin gauze and sulphanilamide. In the recovery ward strictest attention was paid to intake and output of fluid, with special reference to urinary flow. In burns the routine differed but little, but he cut down, if necessary, through burnt tissue to establish the plasma drip. Of the total cases admitted within his observation 4% of the patients had died without surgical intervention (in the main crush syndrome and severe fracture of skull), and among the remainder—96% of all cases admitted—the final mortality was 3.8%.

Definitions of Shock

Dr. J. MCMICHAEL said that shock was popularly supposed to be any state of collapse or fright following an accident, and members of the medical profession should not use the word without qualification. Undoubtedly fright or emotional shock influenced the clinical picture. He went on to indicate certain definite groups of shock: the post-traumatic hypertension to which Dr. Grant had drawn attention in his recent paper in the *British Medical Journal*[1]; neurogenic shock, occurring because the vagus seemed to be playing an important part in keeping the pulse slow; circulatory collapse due to mechanical causes, such as fat embolism, which might occur after injury; and toxaemic shock, presumably due to the flooding of the system with bacterial toxins. Dr. McMichael then described, by means of illustrative cases, some mistakes which were made in the earlier treatment of air-raid injury, such as delay in giving a transfusion or allowing the patient to go to the operating table without any arrangements for the transfusion to be continued. The optimum time for operation was the earliest possible moment after restoration of circulation. The transfusion must be kept going as a drip after an adequate restoration of the blood pressure had been achieved. The irreversible state in which good response could no longer be achieved with the shocked patient could occur when the blood pressure remained at or about 80-90 mm. Hg for too long, and somewhere around that figure seemed to be the critical level below which the blood pressure should not be allowed to stay without transfusion measures.

One major error in treatment was overheating. The warm or hot skin took perhaps half a litre of blood out of the circulation in the more vital organs, where the blood was badly needed. He also mentioned a case which illustrated the fallacy of relying on the pulse rate alone. On the question of giving morphine, he did not agree with it as a routine. Morphine might conceivably be harmful in the severely shocked patient. Such patients did not usually complain of pain, and morphine was not required. They began to complain of pain as the blood pressure recovered, and then he gave morphine in therapeutic doses, 1/4 or 1/6 grain, according to the needs of the patient and the severity of the pain.

The Anaesthetist's Point of View

DR. M. D. NOSWORTHY said that it was now agreed that it was seldom wise to operate while the patient was in a state of shock. Effective resuscitation would convert the patient from a bad operative risk into a fair one. First-class resuscitation had given excellent results even with second-class surgery and third-class anaesthesia. There was some evidence, however, that when a limb was so mangled that it would have to be amputated some time, unless resuscitation produced an immediate improvement in the patient's condition the operation was better performed at once while intravenous therapy was continued.

When immediate anaesthesia was called for, the lightest possible plane of narcosis compatible with the nature of the operation must be employed. This degree of anaesthesia would be obtained with a very much smaller concentration of any anaesthetic agent than would be required for the same individual in normal health. The concentration must also be built up very slowly in order to avoid overdosage.

[1] September 6, 1941.

The responsibility of the anaesthetist should not begin and end in the theatre; his opinion should be of value in the resuscitative and post-operative phases. Continuity of treatment by the same man was very important in the interests of the shocked patient. Morphine was often prescribed empirically. Pain, of course, must be relieved, but patients with most extensive injuries were often in no pain, yet they were given large and repeated injections of morphine. He did not believe that morphine had any specific anti-shock value. Frail patients had been admitted to hospital having had as much as 1 grain of morphine, and had really died of morphine overdosage. At some first-aid posts 1/2 grain was the standard dose, and this was too much for many patients. An adequate sedative effect could be obtained, without the same respiratory depression, by giving an injection of scopolamine with a much smaller dose of morphine. Scopolamine, in contrast to morphine, helped to allay fear. Oxygen therapy offset to some extent the disadvantages of heavy morphine sedation. When restlessness, unassociated with pain, persisted in spite of resuscitation, it was better controlled by intravenous paraldehyde than by morphine.

Dr. Nosworthy went on to outline certain general anaesthetic principles. It appeared reasonable to suppose that anaesthetic techniques which increased the area of the vascular bed would be harmful, likewise those during the administration of which the alveolar oxygen tension was low. The deleterious effects of one agent at a certain depth, however, might not be operative at a lighter plane of anaesthesia, so that this agent, although bad for one type of operation, might be satisfactory for another. Again, there were probably several initiating factors in shock, and anaesthetic agents might produce different results depending upon which factor was uppermost in the case and the degree of shock present.

Criticisms

MR. E. G. SLESINGER expressed surprise at hearing one speaker belittle the value of heat, almost suggesting that because patients could be overheated they should not be heated at all. The value of heat had been proved over and over again, provided that it was not applied to excess so that the patient was sweating and left lying under a hot cradle indefinitely. He also objected to the belittling of morphine. It might be different with civilian casualties which were received early into hospital, but wounded in the field, by the time they had been transferred to a casualty clearing station, were almost invariably in considerable pain and required morphine. No speaker had mentioned the value of intravenous morphine, which could be given safely and had the most dramatic results in cases of great pain in which a hypodermic injection was not absorbed. Procedure in the operating theatre was another point to be stressed. As Surgeon Rear-Admiral Gordon-Taylor had put it, there was no room on the floor of the casualty operating theatre for the "surgical tortoise." Two-hour operations on wounded patients or air-raid casualties were equivalent to a death-warrant. Nor would these patients stand "handling"; they should not be "dumped" from stretchers to beds and beds to stretchers. He was also horrified to find that that monstrous misconception of the last war, the guillotine amputation, had lifted its head again in the Libyan campaign.

Ambulance and Hospital Beds

PROF. J. A. RYLE mentioned some administrative aspects of resuscitation work. The education and drill of stretcher-bearers were important. In civilian work they were too often neglected. Wherever possible stretchers should be moved on theatre trolleys, which reduced oscillation to a minimum. Stretchers for civilian work, though useful pieces of apparatus, were exceedingly uncomfortable, and a patient should not be left long on one of them. It was useful to have some working plan as to the proportion of beds to be set aside for resuscitation. In a hospital capable of admitting and dealing with 100 air-raid casualties, from 20 to 30 beds should be so reserved. The best bed was the old-fashioned hospital bed of firm structure, not liable to kink or bend in the middle, as the E.M.S. beds tended to do when tilted at the foot. The ideal cradle should be light, of wire structure, long enough to stretch from the ankles to the mid-sternum, and high enough for a big patient to get underneath and bend his knees up without hitting the lamps at the side. *X*-ray work, whenever possible, should be carried out with

a portable apparatus to avoid movement of the patient. It was important that all records should be kept together. An open box slung at the foot of the bed in which could be kept temperature charts, treatment sheet, case notes, *x*-ray films, and all other documents was the best arrangement.

Dr. N. T. H. SCHAFFER described the use of large doses of protein serum, particularly valuable in assisting the blood volume to return to normal. Mr. R. H. PARAMORE urged that all patients not suffering from crushed legs or loss of blood should be placed in the Trendelenburg position. When excavated from bombed buildings they should be carried feet upwards to the ambulance, and be maintained in that position within the ambulances on the journey to the hospital.

Lessons of the last War

Dr. GEOFFREY MARSHALL, from the chair, said that in the last war it was found that a given anaesthetic, employed within twenty-four hours of wounding, had an entirely different effect on the mortality rate from the same anaesthetic given for a similar operation to a man who had been wounded more than forty hours previously. Patients given ether anaesthetics who required an amputation through the upper part of the thigh nearly always died after the operation was performed within a short time of the injury, whereas at the base high amputations could be carried out under ether anaesthetics with a comparatively low mortality. The conclusion was reached that ether and chloroform should not be used in severe injuries if the anaesthetic had to be given within a short period of the infliction of the wound, because the mortality rates were consistently high.

Medical literature in the last war described the clinical effects of shock, which were confirmed by Cannon, Bayliss, Dale, and Laidlaw then and afterwards. They showed how shock could be differentiated from the effects of haemorrhage in a considerable number of cases of wounding and the way in which treatment should be varied in such cases. The present generation might well refer back to the lessons of the last war. Recently he had seen a film entitled "Ships with Wings," taken on the *Ark Royal*, in which a man, severely injured, was apparently taken straight away to the operating theatre, given ether with a Clover apparatus, and, quite appropriately, died. He thought that this part of the film would bring disrepute upon the Royal Naval Medical Service, and he suggested that it should be eliminated before being sent to the United States, where a great deal of work had been carried out on the effect of anaesthetics on shock.

INDUSTRIAL DERMATITIS

At a meeting of the Association of Industrial Medical Officers at Manchester on January 31, Dr. P. B. MUMFORD opened a discussion on industrial dermatitis.

There was, he said, need for co-ordination of the points of view of the worker, the chemist, the works doctor, and the dermatologist. The referee who had the final decision on the matter was unfortunately often not a dermatologist, and must often base his opinion solely on the history given to him by the worker. Industrial dermatitis might be brought about in many ways: irritation by acid or alkali, fat-solvent action, deleterious effects of soap, irritation by friction, the blockage of sebaceous ducts, allergic phenomena, and, lastly, by infection with monilia. It was important to educate both worker and management in the matter. There had been much recent discussion about protective applications, but there could be no universal protective. The ideal protective barrier must be elastic, absorptive, must neutralize the irritant, and if possible have a slightly acid reaction. It was also desirable that it should be immiscible with the vehicle in which the irritant reached the skin, should have a greater preferential solubility for the irritant than the skin, lack de-greasing effect, lack penetrative and conveying power, and be easy of removal without energetic detergent action. Some barrier substances made the hands sticky or slimy, but this was undesirable where small or delicate objects were to be handled. Lastly, the application should have a pleasant cosmetic consistency, and be low in price and free from commercial control. It would probably be difficult to find a substance which would meet all these desiderata, but as many as possible of them should be satisfied. There were five types in common use at present: paraffin oils, fats, waxes and mixtures of them, tragacanth, agar and colloid mixtures, clay bases, oil - water emulsions, and, lastly, soap clays. In conclusion Dr. Mumford stressed the importance of selection and choice of work as a most important factor in the prevention of industrial dermatitis.

Dr. A. D. K. PETERS, in a paper on dermatitis in filling factories, said that the dermatitis encountered was of two types: that caused by the actual chemical explosives, and that due to solvents, spirits, etc. The first group was the larger. The dermatitis caused by T.N.T., C.E., and other explosives was a contact dermatitis, a dermatitis venenata. A necessary condition for its development was repeated contact with the irritant: primary factors were duration of contact, length of intervals of freedom from exposure, and friction; secondary factors were the temperature of the workroom, sweating, maceration of the skin, and the presence of abrasions. The actual lesions were caused partly by chemical trauma and partly by allergic reaction. While the exposed parts were usually affected, spreading beyond these might occur because of sensitization. The lesions were initially erythematous and might be followed by papular, vesicular, eczematous, and lichenified conditions. It depended upon whether the tissue response was primarily epidermal or mesodermal, and whether or not there was a preceding urticarial eruption. Complications might be due to superimposed bacterial or parasitic infections, or to the effects of applied medicaments. It was difficult to watch for new cases of dermatitis on the night shift, and as the dermatitis tended to occur between the fourth and fifth days of contact in the case of fulminate of mercury, and between the ninth and sixteenth days in the case of tetryl, it was important that beginners should not be on the night shift during these times. Cheiropompholyx appeared to be more common, and might be very severe, among T.N.T. workers, when it appeared as an erythematous papular rash. Hence it should be regarded as a manifestation of T.N.T. dermatitis, even with obvious fungus infection. As regards treatment, proper washing and total removal from contact should be insisted upon. Ointments should not be used when the worker could come in contact with tetryl or T.N.T. The use of 5% sodium sulphite in soap and a 10% sodium thiosulphate in soap had been found effective in the removal from the skin of tetryl and fulminate respectively.

Dr. A. THELWELL JONES, in a paper on occupational acne, discussed the acne caused by handling chlorinated naphthalenes. There had been much discussion as to how this disease was produced—whether the irritant action was local or whether it was first inhaled and then excreted through the skin. The facts that there was often a latent period of some months between starting the work and the appearance of the lesions, and that repeated crops of lesions appeared after removal from the irritation, would suggest that the effect was local. It was certain, however, that the ultimate effect was a hypersecretion of sebaceous glands: the areas attacked were usually the exposed parts, particularly the face, but often areas underneath the shirt which were not properly washed became attacked. The so-called chlor-acne was not produced by chlorine itself. Chlor-acne differed from acne vulgaris in that the skin was not greasy; there were more blackheads and the nose was commonly spared. The areas attacked were those rich in sebaceous glands; they were irritated so as to produce hypersecretion with subsequent blockage. The reason why the scalp was spared might be explained by the better development of the erector pilae muscles in this area. It was said that the liver was affected; but this would not be the case in acne vulgaris. In prevention it was important to realize that vapour alone was responsible for the condition. It was therefore necessary to remove all fumes. Other methods of control consisted in choosing workers who were not of acne age and did not have greasy skins, in providing washing facilities, in the frequent changing of protective clothing, and in general cleanliness.

Dr. W. F. CHIESMAN, speaking on skin injuries due to vesicants, compared thermal burns with those caused by mustard and other irritants. In the former the burn was surrounded by a zone of leucocytes and the tissue destruction was immediately complete as soon as the burn was inflicted. In mustard burns the burn had a margin of capillaries filled with altered blood, necrotic material, etc. The burn was progressive

up to three or four days. Treatment consisted in (1) prophylaxis, (2) control of the progressive effects of the mustard, (3) the treating of the final burn (which might be conducted on general lines). Dr. Chiesman stressed the importance of speed in the application of anti-gas ointment. No ointment should be used if the skin was actually already damaged. It was important to realize that in an atmosphere of mustard gas the sense of smell becomes fatigued for a while, so that the dangers might not be realized. In preventing the progressive effect of the vesicants the blister should be punctured but the skin should be preserved. Compresses of amyl salicylate reduced the oedema and could be used for three or four days. The final ulcer might be treated with cod-liver oil or by many other methods. Considerable success had been obtained by covering the lesions with perforated oiled silk, and a dry boracic dressing over it.

TUBERCULIN TEST IN RURAL COMMUNITY

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on December 12, 1941, with the President, Dr. R. H. MICKS, in the chair, Dr. MORGAN CROWE read a paper on the value of the tuberculin test in a rural community. (The paper appears in this issue at p. 266.)

Dr. W. R. F. COLLIS said that Dr. Crowe had drawn attention to the importance of the Mantoux test in adults as well as in children. Dr. Crowe had found that even in the quite old adult groups 33% were negative. The ordinary tuberculosis dispensary was cluttered up with cases in which it was not known whether the condition was really tuberculosis or not. In certain countries the Mantoux test was now being carried out as a routine on all nurses and medical students. Recently an investigation had been started in London the idea of which was to take the various groups of nurses and students and examine them with the tuberculin test as they arrived in the various hospitals, and then to do the test at intervals during their stay in hospital. It was essential that the medical profession should take care of its nurses and students.

Dr. DOROTHY PRICE said that unless the tuberculin test was used no progress would be made in the treatment of pulmonary tuberculosis. Dr. Crowe had shown that the percutaneous test in adults was not reliable, though it was reliable in children. It was not fair to ask a radiologist to differentiate between tuberculosis and any other chest condition without first giving him the result of a tuberculin test. It was only by the use of the tuberculin test in country districts that it would be possible for the medical practitioners to treat tuberculosis in the early stages.

Prof. T. W. T. DILLON said that it had now been recognized that primary tuberculosis was no longer a disease exclusively of childhood but was one which could occur during the whole period of life, and more particularly during young adolescence. The social importance of discovering that certain cases were not suffering from tuberculosis was very great. He was not quite convinced of one point which Dr. Crowe had mentioned in his paper—namely, that in cases of early tuberculosis negative allergy was impossible. He was not at all sure that a case of early primary tuberculosis would show a positive tuberculin test in the first six weeks.

Dr. CATHERINE O'BRIEN said that tuberculin testing was now being carried out in the Dublin tuberculosis dispensaries. She wondered what the results would be if the adults who accompanied the children were tested. It was much more serious to miss one case of positive tuberculosis than to keep ten suspected cases of the disease "cluttering up the dispensaries." Tuberculin testing carried out in the country should always be accompanied by *x*-ray examination, and the films should be interpreted by an expert.

Dr. R. E. STEEN was not sure that the tuberculin test would be found to be of as great value in Dublin as it was in the country. He was performing it at present on the nurses in the hospital with which he was connected, and so far all had been positive. If any completely negative reactors to the test were found, it would be a signal to keep a careful watch on them.

Dr. H. PRINGLE and Dr. ALAN THOMPSON also took part in the discussion, and Dr. CROWE replied.

Correspondence

Yellow Fever Prophylaxis

SIR,—Your annotation on yellow fever (February 7, p. 190) conveys a salutary warning to those likely to be travelling in yellow fever areas, but there are certain points which require further emphasis.

The full weight of sanitary precaution naturally falls heaviest on air traffic, but it is obvious that other methods of transport are liable to be incriminated, particularly motor transport, which plies freely between the Congo and Uganda, and from other potentially infected to non-infected areas, whilst the sea traffic from Africa to Asia has not yet received the attention which its possibilities justify.

Granted that the risks of air transmission are high, it has never been proved that air traffic has in any single instance been responsible for the transmission of yellow fever. Those travelling by air fall into three groups: the first, those who have previously suffered from an attack of yellow fever and are therefore presumed to be immune; secondly, those who have been inoculated against yellow fever and who, with certain restrictions, are allowed to travel without hindrance. The third concerns those persons who are able to obtain a medical certificate to the effect that they have not been in a yellow fever area during the past six days or, if travelling to India, during the past nine days.

As regards the first class, the only positive proof of the disease and of present immunity, particularly in view of the difficulty of diagnosing yellow fever in its milder forms, is that obtained by the mouse protection test.

As regards the second class, the position is more complicated than your article suggests. Our latest information is that persons who have been inoculated are not allowed to enter the countries named until the elapse of the following periods: India, 23 days; Uganda, 14 days; Sudan, 20 days; Kenya, 14 days; Tanganyika, 14 days; Northern Rhodesia, 15 days; Egypt, 21 days (believed now reduced to 14 days); Bahrein, 21 days. Strong recommendations were made last year to the Colonial Office to establish a closer uniformity of this practice, and it is a matter of satisfaction that an interdepartmental committee has since been set up between the India Office, the Foreign Office, the Ministry of Health, and the Wellcome Bureau, under the chairmanship of the Medical Adviser to the Secretary of State to the Colonies.

As regards the third class of travellers there has been no difficulty in the past in obtaining the necessary non-exposure certificate, and even where a person had actually been living in a yellow fever zone all that was required was that he should stay in a non-infected zone, which might be an anti-amaryl aerodrome, until his six-day period had elapsed. This caused the anomaly that a recent inoculation against yellow fever acted as a bar to travel, whereas the provision of a medical certificate enabled the holder to proceed immediately on his journey, whilst those who had been inoculated within the period mentioned were liable to be held in quarantine until the period had elapsed. It is highly desirable that the countries concerned should agree to adopt a standard period following inoculation, and the scientific evidence shows that fourteen days is amply sufficient and that this might probably be reduced to ten days. Even in the case of India, despite its amaryl hyperphobia, it should be possible to reduce this long period of twenty-three days to a more reasonable period, because the present regulations decree that a recently inoculated person should be held in quarantine somewhere in Africa for considerable periods.

In any case, the present position emphasizes the necessity for all persons who are likely to travel in Africa, and particularly between Africa and Asia, of submitting themselves to a yellow fever inoculation well in advance of their departure from this country. With commendable public spirit the Wellcome Research Institute in Euston Road carries out this inoculation free of charge.—I am, etc.,

F. P. MACKIE, M.D., F.R.C.P.,
Chief Medical Officer, British Overseas Airways Corporation.

Typhus Fevers

SIR,—It is well known that typhus is much more prevalent in the winter months than in the summer, but the explanations offered appear to me to be much too subtle.

Lack of vitamins in winter may increase susceptibility to some small extent and certainly does increase the death rate to a much greater, but the main explanation of the increase, to my mind, is the huddling together of louse-infested bodies in the cold weather, and the rapid communication of the virus thus facilitated. I base this view on my experience during the great typhus epidemic of 1915 in Serbia. (See *My Balkan Log*, 1921.) Then we had all the conditions of overcrowding, but there was no lack of essential foodstuffs. It was the trains crowded with refugee peasants, and the overcrowding of barracks, hospitals, and prisoner-of-war camps, that allowed the disease to get a grip on the population. In our hospitals, for instance, we had four patients to every two beds pushed together. They were all louse-infested, and the disease, once started, became rampant. As soon as we cleared spaces between the beds and got rid of the overcrowding the percentage of new cases dropped dramatically, although the diet was the same. Our unit consisted of six doctors and twelve British orderlies. We were well fed, well housed, well clothed. We lacked for nothing. Yet three of the doctors and nine of the orderlies caught the disease dressing the infected wounded in our hospitals; and of the orderlies three died, a death rate in our unit of 25%.

It is probable that only louse-borne typhus occurs in Europe, and the flea and tick typhus diseases of tropical countries and America do not concern us. The fact that the body louse can only crawl is, therefore, our main protection. In connexion with this I remember an odd episode. Sir Thomas Lipton had brought out a contingent of nurses on the *Erin* to Salonika, and he was accompanying them on the train as far as Belgrade. We heard they were passing through our station at Uskub in Macedonia late at night, so we went up to greet them. They knew nothing of the epidemic then raging, and I vividly remember their interested faces as I told them about it and that we thought it was louse-borne. "Tell me, doctor," said Sir Thomas, breaking in, "can these little animals fly?" I saw a smile go round the nurses, but I pretended not to notice. "No, Sir Thomas," I answered gravely. "Ah, well," he said, "then it's not so catching as it might be." And he was right. —I am, etc.,

London, W.1. J. JOHNSTON ABRAHAM.

Red Cross Hospital in China

SIR,—After consultation with representatives of the British Government the War Organization of the British Red Cross and Order of St. John decided to offer to send out to China the personnel and full equipment for a hospital of two hundred beds to work in close co-operation with the Chinese Red Cross and located in some place accessible to the motor road system of Free China. H.E. the Chinese Ambassador was approached and cabled his Government in Chungking, and the reply has been received gratefully accepting the offer.

Dr. Gordon Thompson, the Secretary of the British Fund for the Relief of Distress in China, is acting as secretary in this section of our work. The scheme envisages a British staff of one administrator, four surgeons, three physicians, one radiographer, one storekeeper and accountant, a matron, and fourteen nurses. Doctors and nurses, especially any who have a knowledge of the Chinese language, are required, and should communicate as soon as possible with Dr. H. Gordon Thompson, Joint War Organization of the British Red Cross and Order of St. John, 14, Grosvenor Crescent, London, S.W.1, marking their letters "China."—I am, etc.,

HORDER,
Joint Chairman, Hospitals and Medical Services Department.

The Teaching of Anatomy

SIR,—The signatories of the letter on this subject (February 7, p. 196) are probably justified in believing that other teachers will agree with their plea that the study of anatomy should include "general anatomical principles" as well as details of actual structure. It is only when these details have to be ranked as being important, or, alternatively, as being merely "unnecessary topographical minutiae," that difference of opinion is likely to be encountered. Indeed, the writers seem to make the position more difficult by affirming that "the teaching of anatomy, we believe, must cover the whole realm of macroscopic and microscopic structure." It is legitimate to ask if in this "whole realm" are included those topographical details that some omniscient individual, or some authoritative body, might from time to time decide to be no more than "unnecessary minutiae."—I am, etc.,

Manchester. F. WOOD JONES.

SIR,—The letter on this subject by Prof. A. B. Appleton and others (February 7, p. 196) provides a timely opportunity to indicate a defect in the teaching of anatomy which should be corrected in any scheme of reform. This defect is shown by the profound ignorance of the majority of students beginning their clinical work concerning the aspects of anatomy which are of importance in the study of disease. In clinical teaching an anatomical question rarely elicits the proper answer. At any rate, this has been my experience with students from several different departments of anatomy and, I believe, is not unique.

What is the nature of the defect in the teaching of anatomy which such a lack of knowledge suggests? Is it possibly a fault of the present system whereby medical students spend two years under teachers not in clinical practice, in departments of anatomy often widely separated in space, in administration, and perhaps in spirit from the clinics to which the students will proceed? I think it undoubtedly true that under this system teaching will tend to lack clinical perspective and will lead the students implicitly to regard anatomy as a subject unrelated to the study of disease, to be put aside with a sigh of relief on proceeding to clinical work.

Should this be so, a possible, if rather drastic, remedy would be to teach the principles of structural organization as an extension of the biology course, to eliminate the separate department of anatomy and the academic anatomist from the curriculum, and to present the anatomy "required by the general practitioner" during clinical instruction. The latter step would merely be a formal recognition of conditions not infrequently existing in practice now.—I am, etc.,

Cardiff. W. H. GRAHAM JESSOP.

Fracture Setting under X Rays

SIR,—Recently in the *Lancet* and *British Medical Journal* the subject of fluoroscopic control of the reduction of fractures has come under discussion. It has been pointed out that screening of fractures may occasionally be attended with grave risks to both surgeon and patient, and a series of rules for the conduct of screening has been recommended. It is stated that meticulous observation of these rules will render the procedure completely safe.

Only the briefest mention was made of the method of multiple rapid *x*-ray pictures, and yet this method, properly carried out, can make the indications for screening, with its attendant dangers and difficulties, almost a surgical curiosity. It was suggested that the dangers of screening could be minimized if the manipulation of a fracture was followed by a measured interval of observation of the fracture on the screen. The period allowed for observation was given as twelve seconds. The author insisted that the screen was to be kept dim and on no account was the brightness of the screen to be increased, and it was admitted that screening was of little or no value in fractures involving the hip and shoulder regions.

At the Albert Dock Hospital a method of quick *x*-ray examination has been in use for some years: the fracture is manipulated and an exposure is made. Simply as a result of reasonably good theatre team work the surgeon is able to view the result of his manipulation within twenty-five seconds. In screening the surgeon may have to wait for as long as five minutes before he can accommodate sufficiently to use the screen at all. The picture produced by the rapid *x*-ray method is good, though when developed at this speed it may not always be perfect. Small fragments of bone, which may be of paramount importance in certain cases, are, however, easily seen. These smaller fragments are frequently invisible on a dim screen. Furthermore, the cassette can be held by some mechanical device, or members of the theatre team may alternate in this duty, so that the dose of *x* rays which each receives is very small. Another point of some importance is that the surgeon need not wear any cumbersome gloves or lead aprons. In addition to this, the method may be used for almost any

fracture that can occur, including fractures of the vertebrae and hip and shoulder regions.

A check is kept by the radiographer as to the *x*-ray dose received by the patient, and the surgeon is warned if too frequent exposures are made. In one year's experience with this method manipulations were completed long before such a warning became necessary. Finally, this method can easily be used by resident medical officers and does not need constant control by the senior surgeon or radiologist. In all ways the method is entirely satisfactory and, being safe, should always be used in preference to screening.—I am, etc.,

London, E.14. J. COOPER BRASS.

Delayed Union of Fractures

SIR,—Prof. T. P. McMurray (January 3, p. 8) discusses an increase in cases of delayed union of fractures of the lower third of the leg. Major G. D. Rowley from his letter (January 31, p. 161) would also appear to have to deal with many similar cases from various parts of the land. Prof. McMurray holds the view that the increase dates roughly from the outbreak of war, and lays the blame at the door of the unpadded plaster, as the only new development in treatment in the last few years. But is it the only new development, and did the increased time taken for fractures to consolidate only occur roughly at the outbreak of war? Speaking as a general surgeon in a district of heavy industry, I have felt for some years that although fractures are much more efficiently reduced now than fifteen or twenty years ago, the period taken for consolidation has increased in the process. And this increased period necessary for consolidation began with the general application of skeletal traction. It has been my conviction for some years that over-extension by skeletal traction is a sure way to extend the period before the fracture is consolidated. Is not this perhaps the factor overlooked?

Skeletal traction has to be applied to fractures of the lower third of the leg, especially if oblique, and unless radiographic films show good position there is a great temptation to increase the weights too much. It would be interesting to learn from Major Rowley how many of the delayed unions had been subjected to skeletal traction. Hyperextension may have been produced. Not infrequently an unpadded plaster plus heavy weight extension has to be used for lower leg fractures. It is not easy to apply the correct degree of weight extension plus a plaster which efficiently immobilizes a fracture. Probably the weight is more often wrong than the plaster.—I am, etc.,

Sheffield. H. BLACOW YATES.

Preserving the Race in Post-war Reconstruction

SIR,—I should like to express my cordial agreement with the important letter by Dr. W. G. Willoughby on the above subject.

It is frequently stated that the economic factor is of minor importance in considerations affecting the birth rate. This may be true of primitive times and of primitive peoples, though it could easily be shown that economic factors, involving food supplies, etc., have always been of importance in connexion with this subject. In higher civilizations, however, where conscious control is possible, the economic factor is undoubtedly one of first importance, as most parents are keen to give their children a good start in their careers. In our modern days, also, there is not the same emphasis on the next world as the only place where happiness is to be achieved, and there is a natural parental desire for a reasonable provision of opportunities for self-expression and satisfaction in this one. The supplying of domestic help for small households, where mothers, with limited resources, have to struggle with the difficult task of bringing up young children, would undoubtedly alter the outlook of many young married people. The suggestions in regard to housing, etc., which Dr. Willoughby makes are also valuable.

More fundamental, perhaps, is the question of economic security. If parents could be assured that, in the event of anything happening to them, their children would not be left to charity, it would remove a fear which has at present a profound influence on the size of families, and has been found to be at the root of some of the difficulties in securing the evacuation of children from dangerous areas. Some parents deliberately preferred to have their children risking the same fate as themselves rather than that they should be left to an unprotected and precarious future.

It is, perhaps, not easy to see in what way the medical profession could best emphasize this aspect of the birth-rate problem, whose significance they have more opportunities than others of understanding. I am not sure whether it is beyond the scope of the Medical Planning Commission, but, if not, some statement on these lines by the Commission would give an important reinforcement to a public opinion which is steadily and increasingly demanding security from fear and want for future generations, and which would, incidentally, be a real contribution to the solution of the problem of the declining birth rate.—I am, etc.,

London. T. DRUMMOND SHIELS.

SIR,—Dr. Willoughby is right in urging the need of domestic help for mothers to assist in arresting the decline in population. All mothers might, however, not welcome the handing over of their babies to nursery schools; and some system of trained and uniformed home-helps, living at a hostel and not in the home of the employer, their wages recoverable by the municipality according to income, could be an alternative. Incidentally, the uniform should be as far as possible removed from the despised and discredited cap and apron—slacks and jumpers if you will.

From ten years' experience in birth-control work I believe that the greatest single cause of family restriction in the upper and middle classes is the present high cost of a so-called "good education." This connotes to the parent more often the power to buy for his child a ticket for a seat on the economic bus than the cultivation and development of the powers of its mind. If social distinctions in education were abolished in our post-war reconstruction that would do more than any other measure to free the parental instinct from its present repressions, which cause a great deal of dissatisfaction and frustration in marriage. An average family of three to four children would seem to satisfy both the population pundits and the maternal instinct, but this number is not at present welcomed by the fathers who foot the education bill. Finally, it remains true—yes, even to-day, with income tax at 10s. in the £—that, as Macaulay says, "we are taxed far more heavily by our own pride than by the State."—I am, etc.,

Barnes, S.W.13. EVELYN FISHER, M.D., D.P.H.

SIR,—Why the steady decline in the population of Britain? Dr. W. G. Willoughby (February 7, p. 196) very properly states the chief cause of the fall in the birth rate to be "the unwillingness of so many people to have children." But I have always held that there is a deeper and less immediate cause, and that unless we see this quite clearly we shall never be able to rectify the situation to any appreciable extent. First, then, this increasing female barrenness is not merely a British problem, but one affecting more or less all the races of Western civilization. In my opinion it is but one aspect or symptom of a degenerative disease from which all so-called civilized nations are suffering. Let us call the malady, if we will, "devitalization." Further, I hold that the wars into which all peoples are now throwing themselves with such feverish intensity represent a further, and perhaps the final and fatal, stage of the self-same disease. Has it not been observed that vast numbers of people are being killed in the present war—and now not only members of the fighting Services, as in previous wars, but civilians as well—and these of all ages between babyhood and senility? Moreover, the symptom is common to all Western races. Surely this is "devitalization" with a vengeance!

If, then, falling birth rate and spreading warfare are two symptoms of one disease, doctors will appreciate the practical necessity of considering them together if the malady is not to end in total eclipse of the Western races. I trust that some of your readers will support my contention, and are ready to pursue the argument to its logical conclusion.—I am, etc.,

North Queensferry. A. J. BROCK.

SIR,—In the spring of 1939 I had the pleasure of entertaining, in London, a very distinguished French gynaecologist. An ardent Freethinker, it was interesting to observe the blazing surprise and consternation he showed at the open notices, both in the lay and the medical press of this country, advertising contraception clinics, literature, and lectures—things absolutely forbidden on the Continent, and more particularly in France,

for more than a decade. His surprise was that dignified authority, *coram populo*, could descend to what he called "the w.c. of our profession"; his consternation that we had not learned from our nearest neighbour that the result of such publicity and practice was race suicide and death of an empire.

For this reason, Sir, your readers are peculiarly indebted to Dr. W. G. Willoughby for the thoughtful and very gallant letter, a letter that deserves to be in the hands of every Member of Parliament now that Sir Arnold Wilson is no longer with us to hammer in its importance. Let us pray therefore that in the brave new world to come the weighty problem of the modern mother and Martha—the real family home front—be not overlooked or forgotten by politicians and public authorities lest Britain perish.—I am, etc.,

London, W.1. V. B. GREEN-ARMYTAGE.

Haemoglobin of Pregnant Women

SIR,—The correspondence under this heading, and also under "Haemoglobinometry" and "The Stimulant Action of Iron," has interested me, as I have only recently finished an investigation into the haemoglobin levels of 104 women in pregnancy and the puerperium. The results have not yet been published, but a few remarks may be of interest in the correspondence, as these are, to some extent, contrary to some already expressed.

In regard to haemoglobinometry, I agree with Dr. Mills (December 6, p. 823) that the Sahli method is sufficiently accurate for general work provided the instrument is calibrated so that percentages on the Sahli scale can be converted to the Haldane scale for calculation of the C.I., or for comparison with standards expressed in the Haldane scale. The suggestion of Dr. Plesch (December 13, p. 859) appears useful and might have enabled the Haldane scale to be used in my own work, where speed and adaptability to circumstances were required. With so many variants in the Sahli technique it is essential for each one to standardize his method so that 100% represents a known quantity of haemoglobin in grammes per 100 c.cm. of blood.

Drs. Kay and Alston (December 27, p. 926) and Dr. Thomas (January 17, p. 88) appear to have based their estimate of the presence of anaemia in pregnant women upon single readings of the haemoglobin taken at different periods of pregnancy. This does not give a fair comparison, as the haemoglobin level in pregnancy normally varies, falling with the advance of pregnancy until the second half of the last trimester, when there is usually a rise in the haemoglobin. This is most likely due to alteration in the condition of "hydraemia," or dilution of the blood, which occurs in pregnancy. Hydraemia varies in degree from one person to another, but its presence seems to be disregarded by some workers, who base their incidence of anaemia in pregnancy upon non-pregnant haemoglobin standards. My own experience is that hydraemia may account for a lowering of the haemoglobin to 10 grammes per 100 c.cm.

Space prevents me from saying much about the relative iron needs of the pregnant and non-pregnant woman, but certain work by L. S. P. Davidson and H. W. Fullerton (*Edinb. med. J.*, 1938, **45**, 1, 102, 193) and by H. W. Fullerton (*British Medical Journal*, 1936, **2**, 577, and *Arch. Dis. Childh.*, 1937, **12**, 91) would indicate that the figures quoted by Prof. Huggett (January 17, p. 93) for the iron requirements of pregnant women must be optimal and by no means frequently obtaining in the diets of normal women. According to Fullerton, whose views appear well founded, the problem is not so much the increased iron demands of pregnancy as the problem of anaemia existing before the onset of pregnancy.

Many will question the view of Prof. Huggett when he considers maternal anaemia as a cause of iron-deficiency anaemia in the child. Few will have seen a child born anaemic, and we can all think of perfectly healthy children born of anaemic mothers. The iron required by the foetus means a relatively small reduction of the mother's haemoglobin, but for a quantitative discussion of this and a consideration of the causes of infantile anaemia I would again refer to the papers by Fullerton already quoted.

My main point is an appreciation of your annotation (November 29, p. 776), which has been so much criticized by those who would recommend routine iron therapy in pregnancy, if not also in infancy. To my mind there is the danger of going to this other extreme of giving iron needlessly to many persons who are perfectly normal, in order to help the few who could be selected for treatment by more frequent resort to haemoglobin estimation. Your annotation gives us a timely warning that this is not justified even if a rise in haemoglobin may be seen during iron therapy.—I am, etc.,

Hawick. W. KERR HENDERSON, M.B., M.R.C.P.Ed.

Breech Delivery

SIR,—I was much interested in the article on breech delivery by Mr. L. G. Higgins (January 24, p. 105), but I must admit to being still perplexed as to his routine management of these cases. While there is much with which I agree in his article, there are also some statements which I feel are too dangerous to pass unchallenged. In the Services one has not the same access to figures as in peacetime, but though I cannot remember them exactly I know that the uncomplicated foetal mortality in breech cases at St. Mary's Hospitals, Manchester, for the years 1937 and 1938 was below 5%. As I conducted the management of a large number of these cases I feel I may be allowed a few comments on this paper.

First, I would agree entirely with Mr. Higgins that if induction is to be carried out in a breech presentation then rupture of the membranes, just as in a vertex, is almost always the method of choice. I do not agree, however, that it should be carried out as often as he suggests, and particularly not when the weight of the child is only 5½ to 6 lb. in a normal woman.

Secondly, I agree most emphatically with him that extension of the legs is not a harmful factor; in fact, it is to be preferred. I can see no reason, therefore, for his contention that a leg or legs should be brought down. I consider it to be an unnecessary and harmful procedure. He himself points out how the cervix is held open for the descending head by the extended legs. It is the head after all which is the important factor in a breech delivery. The foetal mortality depends almost entirely on the smooth and unhurried delivery of the head, and all the other factors are only of importance as to whether they help or hinder in this. Table I in Mr. Higgins's article shows this clearly, as in all his cases of foetal death there was difficulty either with the head alone or with the head and extended arms.

Thirdly, as regards episiotomy, there seem to be certain contradictions in his paper. In one part he states, in regard to bringing down a leg: "The perineum is often stretched or torn and delivery of the head is made easier on this account." I gathered from this that he does not perform episiotomy. Later he advises it in cases of low impaction, and finally states that in his own practice he carries it out as a routine measure in all cases. I regard episiotomy as an integral part in breech delivery in all primiparae, and in multiparae when necessary. I perform it under local anaesthesia as soon as the breech is at the vulva, and I am convinced that it assists very materially in the descent of the breech, in the safe delivery of the head, and in the relief of pain.

Finally, I cannot understand his attitude towards breech extraction. At one point he writes: "There is no doubt that the advancing breech is best left alone by the average obstetrician and interference is dangerous." He also quotes DeLee, who states: "Routine breech extraction under full anaesthesia gives poorer results than if the breech is allowed to deliver itself until the navel appears, when manual aid is rendered." Later, however, Mr. Higgins writes that "if the breech at the vulva makes no advance in twenty to thirty minutes it is impacted, and it is wise to proceed at once with the extraction. . . ." I feel that there can be few more dangerous statements than this from the point of view of foetal mortality. Even in the best hands I consider breech extraction to be a somewhat hazardous procedure, and unfortunately obstetrics is not always practised by people of Mr. Higgins's ability. In average hands, from the foetal aspect, I consider it to be about as lethal a procedure as there is in obstetrics. I must admit that with an ample episiotomy I have rarely seen these cases of low impaction which Mr. Higgins states are so common.

I hope that Mr. Higgins will not consider my criticisms too dogmatic, but while I feel that there are many extremely good points in his paper I also feel that there is much that is unsound.—I am, etc.,

D. C. RACKER, F.R.C.S., M.R.C.O.G.,
Major, R.A.M.C.

"The Obsession of Fibrositis"

SIR,—Dr. J. L. Halliday's amusing and stimulating letter (January 31, p. 164) suggested to me at first that here was some eminent surgeon flaunting his inability to detect fibrositis and his refusal to believe in its existence; for it is known that a wise Providence has put fibrositis outside the perception of the more distinguished surgeons lest they be tempted. But Dr. Halliday's distinctions do not lie, I find, in the field of surgery, and I soon realized (for it is not immediately apparent) that he is not deriding fibrositis, but rather that miscellany of temporary muscular ills which masquerade under the name—the fleeting local chills, sprains, contusions, and what-not which are peculiarly distressful for hours or days but disappear with rest, home remedies, and procaine. By all means let these ephemeral local tortures be called P.S.S.; indeed, let their treatment be denoted by the same initials, for "Procaine Stifles Soreness"! Not that it would be fair to decry the extraordinary effectiveness of local anaesthetics in the first aid of these agonizing trifles, for the most undramatic physician cannot wholly despise the joyous little miracles which convert stricken immobility into smiling comfort.

But the man who laughs at the real fibrositic scar is one who never felt this particular rheumatic wound. Anyone who has watched, and felt, the slow relentless development of fibrositis in some delicate corner of his own anatomy will not doubt "its existence as a clinical entity," or underestimate its power to wake again after any number of procaine sleeps. He will realize, in regard to some particular painful area, that it gave hints of trouble years before it really settled down to torment him. He will not be deceived by long periods of latency, but be prepared for its reappearance when health is depressed by work or worry or when local chills and strains are suffered. Nor, if he has been from time to time in the hands of a good masseur, will he lack third-party evidence of the accuracy of his own rheumatic geography.

Others, I think, will share with me some doubt as to Dr. Halliday's meaning when he refers to "the theory of fibrositis in its full-blown form." It is surely no theory that he attacks, but rather the modern tendency to attribute all muscular aches and pains to fibrositis, and to allow serious therapeutic value to methods which seem to be founded not on a false pathology but on no pathology at all.—I am, etc.,

London, W. G. LAUGHTON SCOTT.

Sequelae of Vaccination

SIR,—Flying Officer A. M. Turnbull's letter (January 31, p. 165) brings forward an interesting and important point—the desirability for the fuller investigation and recording of the sequelae of vaccination and, I would add, of protective inoculation. One sees records of a certain number of encephalitic sequelae in the former, and it is generally recognized that severe reactions are commoner after primary vaccination. Serious sequelae of inoculation are probably rarer, but, taking the question as a whole, is the present policy of the Services wise—indiscriminate "protection" of all and sundry? Is not the protection worse than the somewhat shadowy risk—at least, for those on home service?

It would be interesting to know the number of work-years lost through trifling disability apart from the occasional severe results. If the present system is continued, at least discrimination might be more generally exercised, and young girls of the Auxiliary Forces not be given T.A.B. and antitetanic inoculation and a primary vaccination on the same day. I do not suggest that this is the rule, but it does occur.

If inoculation and vaccination were performed so far as possible on board ship for those going over-seas, much valuable time would be saved the Services.—I am, etc.,

Preston, Lancs. HAROLD PARSONS.

Heavy Percaine Spinal Anaesthesia

SIR,—I should like to congratulate Dr. Mushin on his excellent paper (January 31, p. 139). There are, however, two statements in it upon which I should like to comment. First, he considers that heavy percaine is unsuitable for operations where both the abdomen and the perineum are involved, as he fails to obtain anaesthesia lower than L3, which, of course, leaves the perineum and the legs below the knee unaffected. This statement is not in accordance with our experience at St. Mark's Hospital, City Road, where we have used heavy percaine for perineo-abdominal excision of the rectum for the past four years or so. I find that a dosage of 1.8 c.cm. of heavy percaine in the third lumbar interspace is adequate. This is given with the patient lying on the side and *horizontal*. Immediately after the percaine is injected into the theca the patient is turned on to the back, with the thighs and knees flexed, and the trolley is tilted to an accurate 5-degree Trendelenburg position. This technique gives anaesthesia from D6 to S4, which means that the patient is anaesthetic from the nipples to the toes for some two hours.

Secondly, Dr. Mushin states that he has given up using percaine for operations in the upper abdomen owing to the difficulty of obtaining complete anaesthesia for such operations as gastrectomy. This has not been my experience, for I find that heavy percaine used in a dosage of 1.8 c.cm., which is expanded to a total of 2.0 c.cm. with C.S.F., given by the technique described above, will give adequate anaesthesia for upper abdominal surgery. There are, however, two additional points in technique to be considered to attain this end. First, the site of injection is raised from the third to the second lumbar interspace if the patient has a long lumbar spine, and, secondly, each patient is rendered unconscious with half a gramme of pentothal given intravenously. This is followed by the administration of nitrous oxide and oxygen (no ether) to keep the patient unconscious. Finally, I should like to add that the fall in blood pressure associated with spinal anaesthesia is now absolutely controllable and can be kept at any predetermined level by suitable means, but this I hope to make the subject of a paper in the near future.—I am, etc.,

London, W.1. FRANKIS EVANS, M.B., B.S.,
Anaesthetist, St. Bartholomew's and St. Mark's Hospitals.

Spinal Anaesthesia

SIR,—The *Journal* of January 31 (p. 139) contains an excellent paper by Dr. W. W. Mushin, which, however, does raise some points for comment. I will quote from his article some of the paragraphs which I feel need some discussion.

"... Light solutions ... are losing ... popularity. Such techniques as those of ... Etherington-Wilson ... though excellent in expert hands, are complex, and failure easily results if details are neglected." I have not noticed that popularity is being lost, but would suggest that in the zest for new solutions and technique in these more enlightened days of spinal anaesthesia in this country, it is inevitable and wise that more will be said, to the exclusion of hypobaric solutions. At some future date, no doubt, an anaesthetist with a bias for spinal anaesthesia, an expert, one who has fairly and fully tried out all the reliable methods in large numbers, will be more fully qualified to assess the true value of any solution or technique.

In 1933, after much experimenting for nine months, more than one possible method of induction presented itself. Among these I felt sure that the vertical-timed ascent of a hypobaric solution would probably be the best. I realized the absolute necessity for simplicity, and said so at the time. Having been convinced myself and not being an anaesthetist I hoped to hand over the method and result to others to try out or to criticize, or even to bring forward the "inevitable" modification. The study of the subject and especially my technique were, however, not allowed to rest there, and various questions by post and visitors to my theatre have kept the interest sustained.

I have never ceased to be interested and have personal and careful records of 1,200 cases, using hypobaric solutions, of which about 300 are concerned with the use of light "spinocaine." The broad simple details of the original technique I have found no reason to modify, but I hope soon to say more elsewhere of dosage and timing to simplify the method further. The word "complex" mentioned in connexion with my method in Dr. Mushin's paper caught my eye, and I hope, perhaps, to disprove this in a paper which is long overdue. One of the definitions of complexity to my mind would be the least amount of manipulation of the patient and, moreover, the same simple movement of the patient for any level of analgesia. Such is not the case in Dr. Mushin's dissertation.

The hypobaric scare still exists in most parts of the medical world, and it was for this reason that I have used "spinocaine,"

the solution barred by instructions on the box for use in the vertical position. I hope the results when published may allay this fear in some at least. Further, spinal anaesthetics have been given by my technique to a small series of babies with pyloric stenosis (*Proc. roy. Soc. Med.*, November, 1941, **35**, 59).

Dr. Mushin further states that "heavy solutions are being increasingly used by virtue of their . . . safety," and in his opinion "for reliable all-round use, with freedom from . . . complications." He also states that "although upper abdominal anaesthesia was produced . . . it is not intended as a recommendation." Heavy solutions used in small doses and in a small area of the spinal canal must contain a high concentration of the drug in order to be effective. He uses the words "safety" and "freedom from complications," but as many as nine of his cases had residual scattered areas of numbness temporarily, and there were five cases of retention of urine. Might it not be that one day these facts may bode greater evil?

". . . Blocking the foot of the bed [after operation] is not of such importance in preventing headache as using a fine needle," etc. In my humble opinion the reverse is the case. I am yet to be convinced about seepage and also that for a time at least the head-down position is not a good position for lung drainage.

Two further points with regard to spinal analgesia generally. Dr. Mushin speaks of the specific gravity of the C.S.F., as many of us do, as 1007. This figure and many limits are copied from book to book. I have just completed a consecutive series of 100 estimations among a very varied group of patients, and found the C.S.F. specific gravity at the normal body temperature to be constant at 1003 to 1004. No change from the figures given was found in slight jaundice, high blood urea, and a diabetic.

I had always believed in the rapidity of the absorption and fixation of the injection solution. This idea, however, has been shaken by finding in a few true lateral spinal anaesthetics, even as late as thirty minutes after injection in one case when the patient had been placed back in the dorsal position to return to bed, that the same height of analgesia has been produced within the usual few minutes in the opposite leg. I imagine this to be more likely to occur with those solutions which are much removed from isotonicity with the C.S.F.—I am, etc.,

Torquay. W. ETHERINGTON-WILSON, F.R.C.S.

SIR,—I have read with great interest Dr. W. W. Mushin's very instructive article on heavy percaine spinal anaesthesia (January 31, p. 139). May I express some reflections on that subject from my experience in Czechoslovakia.

There and, I think, on the Continent generally, spinal anaesthesia is used in about 80% of all lower abdominal operations. It may be said that it is the routine anaesthetic, only abandoned in cases with obvious contraindications. We see, therefore, that the choice of suitable patients was very liberal, and experience did not suggest the need for stricter selection, which, exercised on the lines suggested by Dr. Mushin, necessarily greatly limits the field for spinal anaesthesia. Our criterion was general good condition, particularly of the cardiovascular system.

Our technique was not so elaborate as the one described by Dr. Mushin, and the quantity of percaine used was consequently greater. We have been using percaine "Ciba," a 1/2% isotonic buffered solution, of the same concentration as the heavy solution used by Dr. Mushin. The procedure was as follows: The required amount of percaine was aspirated into a 10-c.cm. syringe, the quantity being on the average of about 3 c.cm., but in exceptional cases of particularly strong patients even up to 5 c.cm. The lumbar puncture needle inserted, we aspirated about an equal amount of C.S.F. into the syringe with percaine and injected slowly about half of the mixture. This aspiration of C.S.F. and partial emptying of the syringe was usually repeated three to four times before injecting the whole contents of the syringe. We have found that in cases where this procedure has not been observed and percaine simply injected complaints of headaches were more frequent. Lumbar puncture was usually performed in a sitting position. The procedure lasted about three minutes, and the patient was put immediately into a horizontal position.

We gave in our hospital an average of three spinal anaesthetics daily, and the need to administer a vasopressor during the operation—we used "sympatol," which is equivalent to "phedracin"—was a rare exception. The main post-operative complications were frequent headaches, which in two patients I could follow lasted for nearly a year; they were, however, in very neurotic types. In 1937-8 we had three cases with marked meningeal symptoms, temperature over 100.4° F., and a strongly positive Kernig's sign; in each the C.S.F. was under increased pressure but clear and sterile. So far as I can remember, the investigations of the specimens gave normal results. All symptoms subsided in about three days.

Spinal anaesthesia is a very quick, reliable, and safe anaesthetic, with the special advantage of lasting nearly three hours, and deserves a much wider attention than it has hitherto had in this country. Last, but not least, we may remember that the surgeon can give the anaesthetic himself, leaving the care of the patient during the operation to an experienced sister—a very important matter with the present shortage of medical staff.—I am, etc.,

Winchester. H. MARGULIES.

First-aid-post Work in Air Raids

SIR,—As medical officer in charge of a first-aid post which has been in heavy and repeated action may I express my appreciation of the paper by Dr. Arthur Line (February 7, p. 193) on first-aid-post work in air raids. I have seen a good many first-aid posts, but have not yet seen one organized on the lines described by him other than that in which I work myself. I was gratified to find step by step throughout the paper points which I have been convinced were correct. Yet many of them are not fully appreciated, and I have wondered what would happen to some first-aid posts suddenly confronted with forty or fifty casualties with no lights or water.

I can verify his findings on the rarity of hysteria, but would add that such cases may develop and come in the day following a raid. I can also verify his observation that the elderly are liable to die several days later for what appear inadequate reasons. Dr. Line's remarks on the reception room correspond with my own beliefs but appear to be unfamiliar to visiting officials, who regard a reception room as essential; it is, in fact, a menace to the efficient working of a hard-pressed first-aid post. The ease of control depends on a very large treatment room or hall, and no reception room as such. In our case also the treatment is brought to the patient by dressing trolleys, and the patient is not brought to the treatment. Those requiring injections are, as in his case, dealt with by a pharmacist with a special "injection trolley." I would also like to reinforce Dr. Line's point on the importance of a thoroughly reliable person in charge of "evacuation." Dr. Line appears to be fortunate in his supply of baths and hot water. As so many casualties are in a state of indescribable filth from debris and soot it is often impossible to do anything until they have been stripped and washed or bathed.

One would wish that, in the light of the experience we have gained, the layout and equipment of first-aid posts could be reviewed. I would stress in particular the difficulty of handling a first-aid post which is also a decontamination centre with the staff available.—I am, etc.,

London, S.E.25. H. H. A. ELDER, M.B., Ch.B.

Prophylactic Use of Trusses

SIR,—I sympathize with Dr. E. Marcus Liddle (January 10, p. 56) in his quandary about the employee who has a pre-hernial condition, or Malgaigne's bulging over the inguinal canal.

The point at issue from the works medical officer's point of view is, I suggest, as follows: "I am employed by this firm to prevent loss of time in industry due to illness or injury and to cut down expenses from such causes. This employee could easily develop a full-blown hernia. Should he do so, he will claim compensation for his hernial condition, or else claim that a pre-existing condition has been aggravated by his work. He will be absent for at least eight weeks if the operation is successful—that is, if he can obtain immediate operation, which is unusual, unless strangulation has occurred. He is then likely to be a nuisance owing to his fear of resuming full work. The recurrence rate is high, and he may have further disablement."

In fact, in peacetime, where a firm has to bear the expense of compensation itself, the works medical officer does not feel

justified in taking on a man with hernial weakness, even should he wear a truss. Dr. Liddle's two questions are therefore irrelevant from the works medical officer's point of view. I trust that this letter will ease any ill feeling that may arise between two harassed members of the profession, who have to view human material from entirely different angles.—I am, etc.,

London, S.W.16. THOMAS MORTON.

Obituary

It is with the greatest regret (writes Dr. Percy B. Spurgin) that I read of the death of ARTHUR KEITH GIBSON. I have known him for many years, but it was not until the centenary year 1932 that I came into intimate contact with him and learnt to appreciate and value his outstanding qualities. As chairman of one of the committees preparing for the centenary I asked Gibson to act as my secretary: I had in him a colleague full of ideas and, what is more, the ability to carry those ideas to fruition. His meticulous attention to the smallest detail was wonderful, and I found in him a man after my own heart—not afraid of work, however trying—a splendid collaborator with a clear brain, quick to grasp the trend of any argument, to pick out the weak spots or to augment with useful suggestions. As an organizer he possessed outstanding ability. I have had much to do with him in later years, and his valuable help as honorary secretary during my year as president of the Metropolitan Counties Branch and a little later, when he became a full-time Regional Secretary and I was chairman of the M.C.B. Council, was beyond praise. To the latter post he devoted himself whole-heartedly, and, in spite of having to create a new position for himself in the Association, was steadily increasing the prestige of the M.C.B. by his encouragement of Divisional activities all over the area. An uphill struggle; he never ceased to apply all his efforts to the job, and was meeting with a large measure of success when war broke out. His organizing ability was then diverted to a different end, at which he worked with his usual energy, helping the profession during the change-over from peace to war preparation. A whole-hearted B.M.A. man, a clear-headed and kindly colleague, Gibson will be greatly missed and sincerely mourned by all members of the M.C.B. and others who knew him and valued his work. He died as he would have wished—helping others.

Dr. GEORGE NICHOLSON STATHERS, who died on February 6 at Brackley, Northamptonshire, aged 84, was a member of the British Medical Association for fifty years until he retired from active work on account of failing sight at the end of 1928. He studied medicine at University College, Dublin, took the M.R.C.S.Eng. and L.R.C.P.Ed. diplomas in 1879, and the D.P.H. of Cambridge in 1891. He was for many years surgeon to the Brackley Cottage Hospital, medical officer of health for the first Wycombe Rural District, and for the Brackley Urban and Rural Districts. His son, Dr. Gerald Nicholson Stathers, joined him in partnership at Brackley and continued in practice there after his retirement.

Information has been received of the death of Dr. H. CARRIERE at Berne on December 24, 1941. Dr. Carrière was the late Director of the Federal Service of Public Health, and had represented Switzerland on the Permanent Committee of the International Public Health Office, Paris, for many years; he was president of the Finance Committee, and had been senior delegate since the death of M. Camille Barrère.

The January issue of the *Postgraduate Medical Journal*, which is devoted to Anglo-Soviet medicine, contains a foreword by M. Maisky, the Russian Ambassador; an introduction by Sir Alfred Webb-Johnson, P.R.C.S., who is President of the Anglo-Soviet Medical Committee; and papers on Organization of the Medical Services of the U.S.S.R. by Dr. Joan Macmichael; Public Health, by Sir Cuthbert Sprawson; Doctor and Patient in the Soviet Union, by Dr. Julius Lipetz; Tuberculosis in the U.S.S.R., by Dr. T. F. Jarman; and Gynaecology and Obstetrics in the U.S.S.R., by Mr. V. B. Green-Armytage.

The Services

ROYAL NAVAL VOLUNTEER RESERVE OFFICERS' DECORATION

The King has approved the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surgeon Commander Francis Alexander McLaughlin, R.N.V.R.

ARMY AWARDS

The M.C. has been awarded to Captain Leonard Bapty, R.A.M.C. (*corrected announcement*) and to Captain Arthur Dyce Picton, R.A.M.C., in recognition of gallant and distinguished services in the Middle East.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Captain NORMAN ALTHAM, who died after a short illness on December 22, 1941, in his twenty-eighth year, had been a prisoner of war in Germany since June, 1940. He was the elder son of Mr. and Mrs. J. G. Altham of Buxton and formerly of Salford and Prestwich, Manchester, and was educated at the University of Manchester, where he graduated M.B., Ch.B. in 1938. He entered the R.A.M.C. as lieutenant in November, 1938, was promoted captain in April, 1940, soon after being posted to No. 2 Field Ambulance with the B.E.F. in France, and later was attached to the 1st Battalion the Gordon Highlanders. He was a member of the British Medical Association.

Wounded

Temporary Major William Gordon Macfie.
War Substantive Captain Leonard Bapty, M.C.
War Substantive Captain Aidan Robertson Duff.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS OF ENGLAND

BUCKSTON BROWNE LUNCHEON

The Buckston Browne luncheon for Fellows and Members was held on February 12 at Claridge's Hotel, with the President, Sir Alfred Webb-Johnson, in the chair, and on his right hand the Princess Royal, who is an Honorary Fellow of the College and wore the robe and cap. Prof. Stanislaw Stronski represented the President and Prime Minister of Poland. The guests were received by Sir Alfred Webb-Johnson and the two vice-presidents, Surgeon Rear-Admiral G. Gordon-Taylor (now returned from America) and Mr. L. R. Braithwaite, and a large muster of members of the Council. For the first time lady Fellows and Members formed part of the company. Before the assembly of 200 sat down a loyal message was sent to the King as Visitor of the College, and afterwards an acknowledgment was received from His Majesty.

The President in his speech of welcome said that this was a domestic occasion when the Council, acting vicariously as hosts, offered hospitality provided in perpetuity by their faithful friend and colleague, Sir Buckston Browne. He knew that all would wish him, besides thanking the Princess Royal for her attendance, to say how greatly they admired all that Her Royal Highness was doing to help the country to-day. In welcoming Prof. Stronski, Polish Minister of Information, he spoke of the Honorary Fellowship for Prof. A. T. Jurasz, Dean of the Polish Faculty of Medicine in the University of Edinburgh, and said it was designed to do honour to a distinguished Polish surgeon and to a gallant Ally. The ceremony was arranged for that day because the Council felt that many Fellows and Members would wish to take part in the tribute. It carried his thoughts to that heroic Polish girl Manya Sklodovska, who, leaving her native Warsaw, was destined as Marie Curie to put into the hands of the medical profession the most powerful weapon of healing it has ever wielded. Though Sir Earle Page was present "as one of ourselves" the President knew that all would wish to give him a special welcome and to assure him that the people of this country, as well as of Australia, felt stronger and more confident for his inclusion in the War Cabinet. Dr. Daniel P. O'Brien, representative of the Rocke-

feller Foundation, had impressed the Council by his sympathetic understanding and prompt action when the need arose; his help to the College would be a landmark in its history. Welcoming the vice-chairman of the Baron Trustees, the President said that it was Mr. Danbury's decided conviction and broad vision that led to the further gift from the Trust which came at the very next Council meeting after the disastrous bombing. They were glad to see safe and sound the peripatetic and mercurial President of the Royal College of Physicians after his official visits to Russia and to the United States and Canada. They welcomed the President of the Royal College of Obstetricians and Gynaecologists, the Master of the Society of Apothecaries, and the President of the Royal Society of Medicine; also the Chief Medical Officer of the Ministry of Health, and the Directors-General of the Royal Naval, the Army, and the Emergency Medical Services, assuring them of help and co-operation in their great responsibilities. Since the last meeting they had to deplore the loss of a very dear and faithful friend in Sir D'Arcy Power, and of two Honorary Fellows, H.R.H. the Duke of Connaught and Sir Frederick Banting. Addressing his immediate predecessor, Sir Alfred said they might well be thankful that Sir Hugh Lett had presided over the destinies of the College at a time when his qualities of wisdom and courage were so greatly needed; it would always be in his debt for his Herculean labours in evacuating and dispersing the thousands of specimens that were saved from the Museum. The loss had been severe, but they were encouraged by messages of sympathy from many sources—from the King to the humblest worker in the biological sciences—and had received offers of help from all parts of the world: "So we have reason for being confident that within a measurable time after the war we shall be able to acquire once more a collection worthy of the headquarters of British Surgery." When planning for the future, progress and tradition had to be reconciled. In order to be worthy of Hunter's teaching and example, two needs stood out clearly: to preserve the broad bases on which the whole edifice of biological knowledge was built, and at the same time provide for pioneer work under men of wide biological outlook. Lastly, in proposing the health of the founder of the feast, the President spoke of Sir Buckston Browne's splendid vigour and vitality, his gift of keeping young in heart and maintaining an active interest in human affairs. Sir Buckston was enthusiastically cheered on rising to acknowledge the toast, and spoke with resonant voice for all his ninety-one years.

Honorary Fellowship for Prof. Jurasz

The ceremony of admission of Prof. Antoni Jurasz to Fellowship of the College *honoris causa* gave the President an occasion to pay tribute to Poland and the unquenchable Polish spirit under calculated brutality and a deliberate plan to destroy its centres of intellectual life. "We offer you this honour," he said, "in recognition of your own work, but it is also a token of our faith in the complete restoration of your country. The first essential step towards restoration is the training of young men and women for the task, and we have been deeply impressed by your remarkable achievement in establishing a Polish Faculty of Medicine in the University of Edinburgh. You have found a spiritual home north of the Tweed, maybe because centuries ago a colony of Scots settled in Poznan and there have since been many cultural links between Edinburgh and Poland. But your English colleagues wish to show their appreciation of your work by offering you the highest honour they have to bestow."

Prof. Jurasz expressed his sense of the great honour conferred upon him and his gratitude to the President for the touching tribute paid by this gracious and sympathetic gesture to the Polish nation and to colleagues in Poland now enduring such terrible tribulation. He interpreted this personal honour as a desire on the part of the Royal College of Surgeons of England to honour his country and in particular her men of medicine and of science. "It is only through this war," he said, "that the great Western democracies have come to realize fully that, in a nation's struggle for life, the decisive factor is not the numbers of inhabitants, their wealth, or the absolute superiority of their armed forces, but that it is—as you, Mr. President, have so rightly mentioned—the spirit inherent in each individual, and therefore in the nation as a whole, which determines its greatness and its claim to continued existence. Great Britain and Poland—so different geographically and politically—are, however, very similar in respect of their spirit, idealism, and determination. We have to fight together to establish, not only this inner battle line by strengthening our own scientific and professional relations, but we have to make up our minds to use this growing intellectual army to win the peace for which we are striving."

Before the proceedings ended the Princess Royal in a few gracious words said how pleased she was to be present on this occasion and to add her congratulations to Prof. Jurasz on the honour conferred upon him by the College.

The Bradshaw Lecture will be delivered at the College (Lincoln's Inn Fields, W.C.) on Thursday, February 26, at 2.30 p.m., by Surgeon Rear-Admiral G. Gordon-Taylor on "Abdominal Injuries of Modern Warfare." Fellows and Members of the College are invited to attend. Students and others who are not Fellows or Members of the College will be admitted on presenting their private visiting cards.

The above lecture takes the place of the Hunterian Lecture announced in our issue of January 17 (p. 96) to be given by Surgeon Rear-Admiral Gordon-Taylor on February 26.

UNIVERSITY OF CAMBRIDGE

The Raymond Horton-Smith prize for the best M.D. thesis presented in the academical year 1940-1 has been awarded to J. O. Poynton, M.D., of Gonville and Caius College.

At a Congregation held on February 6 the following medical and surgical degrees were conferred:

M.D.—W. H. Valentine, E. T. C. Spooner.

M.B., B.CHIR.—*E. V. Hope, *S. L. Melville, *G. C. Franklin. *A. H. Rea, *N. Gillman, G. F. Purves.

* By proxy.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council, held on February 13, it was decided that because of the close association of the department of pharmacology with clinical teaching and because the professor of pharmacology is responsible for the teaching of therapeutics, the department of pharmacology should in future be given the title of Department of Pharmacology and Therapeutics, and that the professor of pharmacology should be given the title of Professor of Pharmacology and Therapeutics.

Medical Notes in Parliament

The Factories (Notification of Diseases) Regulations, 1942, made under the Factories Act, 1937, was presented to Parliament on February 5. This extends the provisions of Section 66 of the Act to toxic anaemia.

Sir Ernest Graham-Little, Sir Henry Morris-Jones, Dr. Summerskill, Captain Elliston, and Sir John Graham Kerr tabled a motion calling for a Select Committee to inquire into the considerations which obstruct the exclusive provision as a war measure of a national wheatmeal loaf.

Silicosis among Tin-miners

On February 10 Mr. MESSER asked the Secretary for Mines if the one medical inspector in the Mines Department, who was responsible for nearly 1,000,000 workers in mines and quarries, was sufficient medical staff, in view of the possibility of the tin mines being reopened. He also asked if the Minister was aware that silicosis was much more prevalent among tin-miners than among coal-miners, and that the annual report for 1938 showed that out of 1,500 workers 20 died of silicosis.

Mr. D. GRENFELL replied that it was well known that silicosis was present in Cornish tin-miners, and that certain preventive measures were laid down by regulation to protect the workers against the incidence of this disease. He did not think that the men in Cornwall were lacking attention from want of medical knowledge on the subject. The inspectorate of the Mines Department was sufficient for this purpose, but a very extensive investigation had been going on under the Research Board. The Lord President of the Council was in charge of it, and he expected a very comprehensive report from that body within a few weeks.

Health Standards of Home Guard

On February 10 Mr. RHYS DAVIES asked the Secretary of State for War whether any steps were taken to prevent mental deficients and other categories exempt from the armed Forces from joining and retaining their connexion with the Home Guard. Sir EDWARD GRIGG replied that volunteers for the Home Guard were registered at the local police station in the first instance, and if considered suitable for enrolment were interviewed by the unit commander. Home Guards could, of course, be of a lower medical standard than regular soldiers, and commanding officers could be relied on to accept only such men as were fit to perform Home Guard duties.

Mr. DAVIES asked if the Minister was aware that no method existed up to the present for finding out whether certain persons were mentally deficient or not; that practically all the mental deficients were properly registered; and that a scheme should be evolved whereby officers of the Home Guard could be put in touch with those registers.

Sir EDWARD GRIGG: All available information is obtained.

Increase in Industrial Dermatitis

On February 10 Mr. D. GRENFELL informed Mr. Griffiths that the workmen's compensation statistics showed for the coal-mining industry a decrease in cases of nystagmus, beat-hand, and affections of the wrist and tendon sheath, and an increase in cases of silicosis, beat-knee, beat-elbow, and dermatitis. Special inquiries were being made to find out why the certificates of disablement in respect of dermatitis, which ten years previously were very few, reached a figure of 400 in 1940.

Medical Staffs at Ordnance Factories

Sir ANDREW DUNCAN stated on February 11 that responsibility for the appointment of medical staffs employed at Royal Ordnance factories rested with the Ministry of Supply. Vacancies were advertised, and candidates were also nominated by the Local Medical War Committee. In making selections the Ministry of Supply was advised where necessary by Ministry of Labour inspectors of factories and by independent medical practitioners.

Town and Country Planning

Mr. ARTHUR GREENWOOD announced on February 11 that existing statutory duties in regard to town and country planning in England and Wales would be transferred to the Ministry of Works and Buildings, whose title would be changed to Ministry of Works and Planning. The Ministry would lay down the general principles with which town and country planning must conform. The Secretary for Scotland would exercise similar functions in Scotland. A committee representing other Departments concerned would ensure that the national policy of urban and rural planning was carried out as a single and consistent whole. The Government believed that by this procedure the speedy provision of houses, redevelopment of devastated areas, clearance of slums, relief of overcrowding, and promotion of rural development could be welded into a single and consistent policy.

A similar statement was made in the House of Lords by Lord REITH.

E.M.S. Hospitals

On February 12 Mr. JAMES HOLLINS alleged that there were long waiting lists at voluntary hospitals and an unwillingness to transfer patients to emergency hospitals. He asked the Minister of Health to recommend that the latter be made available for people desiring treatment.

Mr. ERNEST BROWN replied that where hospitals were found to have unduly large waiting lists their attention was drawn to the facilities which existed for transferring patients to other hospitals under the Emergency Hospital Scheme. The object in view was similar to that under the plan of the Department of Health for Scotland, but the financial arrangements were not quite the same owing to the difference between the hospital systems of the two countries.

In a reply on the same day to Mr. James Griffiths, Mr. BROWN said patients included in the Emergency Hospital Scheme comprised members of the Forces, air-raid casualties, civil defence workers injured on duty, and other classes. The arrangements were designed to avoid interference with the admission to hospital of other persons in need of in-patient treatment. There should be no priority for admission to hospital other than that indicated by the medical needs of the patient. As regards workers engaged on war production, those who had been transferred from their home areas were already included in the scheme, as also were those sustaining fractures, whether in their home areas or not. Other war workers remaining at home should have access to their normal hospital facilities. If these were subjected to undue pressure owing to war conditions arrangements were made under the Emergency Scheme to transfer patients to other suitable hospitals.

Tuberculosis

Asked on February 12 what steps he was taking to combat the increased incidence of tuberculosis, Mr. BROWN answered that the most important factors in preventive action were the maintenance of as high a level of hygiene and nutrition as possible. The public health authorities and the Ministries concerned were taking all possible steps. The investigation which the Medical Research Council was making as to the possible causes of increase in tuberculosis was a necessary preliminary to the adoption of any special measures for dealing with the problem. In the meantime facilities for early diagnosis and treatment were being maintained at as high a level of efficiency as wartime conditions permitted.

Medical News

The Ex-Services Welfare Society will hold an interim conference at the Royal College of Physicians, Edinburgh, on Friday, March 6, at 10 a.m. The subject for discussion is the after-care of neurotic war casualties: (1) the discharge from hospital, (2) the pension problem, (3) rehabilitation.

The next quarterly meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, W., on Thursday, February 26, at 2.30 p.m., when a paper on "Electrical Convulsant Thresholds" will be read by Dr. J. H. Gould.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, February 26, at 5 p.m., when a paper will be read by Dr. Eric Gardner on "Sudden Death in Water and from Choking and Suicidal Hanging."

Colonel D. B. McGrigor will deliver a lecture on "Radiology in Wartime" at the Weston Hotel, Bath, on Thursday, February 26, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

Dr. W. Haward has been appointed Director-General of Medical Services to the Ministry of Pensions in place of the late Dr. H. Lightstone.

Two London hospitals for children—the Princess Elizabeth of York Hospital, Shadwell, and the Queen's Hospital, Bethnal Green—have agreed to amalgamate under the name of the Queen Elizabeth Hospital for Children. This amalgamation will also include the new country hospital at Banstead, Surrey, the Bailey Convalescent Home at Bognor Regis, the Little Folks' Home, Bexhill, and an annexe at Woking. The Queen's Hospital was founded in 1867 as the North-Eastern Hospital for Children. The Princess Elizabeth of York Hospital was founded in 1868 as the East London Hospital for Children. To give effect to the decision to amalgamate an Act of Parliament is necessary.

The Medical Research Council announce that their radiotherapeutic Research Unit (formerly Radium Beam Therapy Research) has now resumed clinical work in new quarters which have been provided by the London County Council at Hammersmith Hospital. For the present this work will be confined to the treatment, by radium beam therapy or *x* rays, of cases of carcinoma affecting the buccal cavity, tongue, pharynx, and larynx. The director, Dr. Constance A. P. Wood, would be glad to have suitable cases referred to her: these should be patients who have had no previous treatment, either surgical or radiological, and preferably not in a very advanced stage of the disease. The physical work under the charge of Mr. L. G. Grimmett, which has meanwhile been continued in temporary quarters at the Imperial College of Science and Technology, has also been transferred to Hammersmith Hospital.

EPIDEMIOLOGICAL NOTES

Discussion of Table

An increase in the number of notifications in England and Wales was recorded for measles, pneumonia, cerebrospinal fever, and dysentery; the totals were respectively 266, 146, 20, and 22 in excess of those in the preceding week. A decrease occurred in the incidence of whooping-cough and diphtheria, the notifications being 73 and 13 fewer than in the past week. The number of cases of scarlet fever was the same as in the previous week.

The increase in the incidence of pneumonia was accounted for chiefly by the counties of London, Middlesex, Lancashire, and Yorkshire, West Riding. Almost a third of the cases of diphtheria were reported from the two counties of Lancashire, 162 cases, and Yorkshire, West Riding, 117 cases. Although a general decrease was recorded in the incidence of whooping-cough, there was an increased prevalence in Staffordshire, Lancashire, Wales, and Warwickshire. The notifications were fairly widely distributed throughout the areas, except in Warwickshire, where 45 of the 53 cases were in Birmingham C.B.

The notifications of measles, scarlet fever, whooping-cough, and dysentery in Scotland were fewer than in the preceding week; the figures for diphtheria, cerebrospinal fever, and acute primary pneumonia were higher. The slight increase in the number of cases of diphtheria was due to the experience of the South-Eastern areas. Of the 42 cases of cerebrospinal fever 21 were recorded in Glasgow and 7 in Edinburgh. The 419 notifications of acute primary pneumonia constituted the largest weekly total during recent months; almost one-half, 199 cases, were reported from Glasgow.

Measles

The relatively large increase in the incidence of measles in England and Wales was due to local outbreaks in a few counties, mainly in the urban areas. The notifications in these counties and the chief local centres of infection were: Surrey 203—Kingston-on-Thames M.B. 38, Reigate M.B. 26, Dorking and Horley R.D. 39; Middlesex 99—Harrow U.D. 55; Warwickshire 80—Birmingham C.B. 41, Solihull U.D. 23; Lancashire 196—Manchester C.B. 41, Oldham C.B. 47; Durham 99—Gateshead C.B. 24, Stanley U.D. 39; Northumberland 77—Newcastle C.B. 59.

Dysentery

As a result of outbreaks of dysentery in three counties there were 22 more cases than in the previous week. The outbreaks occurred in London, St. Marylebone 25 cases; Surrey, Carshalton U.D. 12 cases and Coulsdon and Purley U.D. 8 cases; Cumberland, Border R.D. 10 cases. This is the third outbreak in the district of Border during recent weeks, and follows an interval of three weeks without a case. The first outbreak covered the three-weeks period November 23 to December 13 and resulted in 53 cases; after an interval of one week without a case 26 cases were reported during the two weeks December 21 to January 3.

Returns for the Week Ending February 7

The notifications of infectious diseases during the week included scarlet fever 1,113, whooping-cough 1,251, diphtheria 920, measles 1,611, pneumonia 1,366, cerebrospinal fever 181, dysentery 115, paratyphoid 9, typhoid 11. In the large towns 84 deaths were attributed to influenza.

Surgeon Rear-Admiral G. Gordon-Taylor, senior Vice-President of the Royal College of Surgeons of England, during his recent tour of the United States and Canada expressed the thanks of the medical profession in Great Britain for the timely aid given to it and to the British victims of air raids. He paid a tribute to the American Ambulance in Britain for their valuable work in salvaging and convoying to safety what remained of the Hunterian Collection after the Museum had been wrecked by bombs. A fleet of American ambulances was provided, in which 78 loads of specimens were removed to safe places. Out of 24,000 fragile specimens so moved only six were at all damaged during transport.

No. 4

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 31.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	156	6	42	4	7	331	29	68	4	19
Deaths		1	3				5	6		
Diphtheria	892	31	228	31	28	1,119	43	360	20	33
Deaths	33	4	7	1	1	33	2	13	1	1
Dysentery	125	29	32	—	—	129	10	19	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	6	—	—		—	4	4	1		—
Deaths		—	—				1	—		
Enteric (typhoid and paratyphoid) fever						10	1	1	3	—
Deaths						1	—	1	—	—
Erysipelas		—	53	11	5		29	50	8	3
Deaths		—	—				1	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	48	9	4	7	2	29	1	12	7	1
Measles	1,235	107	77	77	1	17,186	501	206		18
Deaths	2	—	1	—	—	15	2	2	1	—
Ophthalmia neonatorum	69	2	23	—	—	83	2	12	1	1
Deaths										
Paratyphoid fever	14	1	1	—						
Deaths		—		—						
Pneumonia, influenzal*	1,304	83	29	—	21	1,640	155	47	26	6
Deaths (from influenza)	90	15	4	1	2	176	45	26	16	5
Pneumonia, primary			419	18				469	16	
Deaths		95		10	10		128		26	16
Polio-encephalitis, acute	—	—				2	2			
Deaths		1					—			
Poliomyelitis, acute	5	—	1	1	—	15	—	3	—	—
Deaths		—	—				—	—		
Puerperal fever		—	16	3	—	1	1	9	2	—
Deaths		—					—			
Puerperal pyrexia	167	9	22		3	119	9	8		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,076	24	192	33	27	1,245	61	149	44	38
Deaths	3	—	—	—	—	2	—	2	—	—
Small-pox	—	—	—		—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	10	1	—	5	2					
Deaths	—	—	—	1	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,439	24	38	29	—	3,711	56	489†	—	23
Deaths	3	—	2	—	—	29	1	14	1	1
Deaths (0–1 year) Infant mortality rate (per 1,000 live births)	509	58	75	19	17	392	24	90	29	19
Deaths (excluding still-births)	6,464	1,059	816	204	164	7,020	1,207	1,006	313	160
Annual death rate (per 1,000 persons living)			18·4	13·6	‡			21·9	20·8	17·0
Live births	5,755	550	897	337	204	5,147	324	927	360	254
Annual rate per 1,000 persons living			18·5	22·5	‡			36	23·9	26·9
Stillbirths	230	20	44			207	16	36		
Rate per 1,000 total births (including stillborn)			47					37		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Notification in certain administrative areas only.

‡ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

"Burning" Hands with Engorged Veins

"M.D." writes: I should be glad of suggestions for treatment in the following case. A lady, in good general health, three years past normal menopause, has increasing distress from "burning" of the hands of several years' duration. The hands are rarely cool (though formerly mostly so), and now summer weather or five minutes by a fire in winter bring on an intense burning sensation with visible congestion and engorgement of the veins. The palms are chiefly affected, especially pads of the fingers and hypothenar eminence. The burning is accompanied and followed for some time by tenderness and a hypersensitive condition of the skin. Recently similar symptoms affect the feet, but to a somewhat lesser degree. There is complete absence of sweating of palms and soles. Local applications in the daytime are contraindicated by the nature of her occupation, which could in no way account for her symptoms.

Treatment for Chilblains

C. C. B. writes: I shall be glad if any of your readers will offer suggestions in the treatment of a case of intractable chilblains; only the feet are affected. Treatment has consisted in the injection of calcium with vitamin D; exposure to ultra-violet rays; and large doses of iron with an admixture of copper and manganese. The patient is a lady in the early thirties. Her general health is good.

Treatment of Threadworms

Dr. G. H. H. BOOTH (Knighton, Radnorshire) writes: In the queries and answers column of the *Journal* for January 31 (p. 171) I note under "Treatment of Threadworms" that gentian violet is suggested by Sir William MacArthur as the most efficient drug for oral use. I would like to know how the drug is administered, and the dosage. I have used crystalline hexyl-resorcinol with excellent results in children, but am now unable to obtain it. I can find no mention of treatment by gentian violet in my textbooks.

Income Tax

Property: Increase in Rent

"L. S. D." used to let his house at £100 a year, and has now let it at £125 a year. The net Schedule A assessment is £84. What should be the income tax?

*** The Schedule A assessment will remain unaltered, but there will be additional liability under Schedule D. The annual amount of that liability will be as follows: New rent £125 less the repairs allowance appropriate to that amount, which is £24, leaving £101; from this the Schedule A assessment of £84 is deductible, leaving £101−£84=£17 chargeable under Schedule D.

E.M.S.: Board and Lodging

H. W. was acting as a house officer in the E.M.S., and as there was no room at the hospital he was billeted out, and the local authority paid him at the rate of £2 a week to cover board and lodging. Is this amount taxable?

*** Yes. As it was received in money and not in a form incapable of being turned into money—as is the case with actual board and lodging—it is chargeable to tax as an emolument of the appointment.

LETTERS, NOTES, ETC.

Oxytocic Injections by Midwives

Dr. J. D. FREW writes from Freeland, Oxford: The recent correspondence on this subject is of such importance that it should not be allowed to die without a definite conclusion being reached. As Dr. W. J. Clancy states (January 10, p. 56), the rules of the Central Midwives Board permit the injection of such drugs by midwives *after the completion of the third stage of labour*, and as an examiner of eleven years' standing I have yet to meet a fellow-examiner who did not expect a pupil midwife to include in her answer to a question on the subject of post-partum haemorrhage an injection of pituitary extract or ergometrine. It would seem, therefore, from Dr. Clancy's letter, that certain municipal authorities have compiled their own rules, which are to override those laid down by the Central Midwives Board. If this be so, State-registered midwives should be advised not to apply for any posts under such backward municipal authorities. J. H. of Plymouth (February 7, p. 208) adds nothing of practical value to the argument by his idealistic remarks. The most alert of "flying squads" will take at least a quarter of an hour to reach the patient, who may die in ten minutes although her ante-natal treatment was flawless and her labour normal.

Dazzle from Car Lights

Dr. W. REGINALD WILSON (Doncaster) writes: I hope this may catch the eye of someone who can do something to abate what is a serious evil. I mean the dazzling one has to encounter on the roads from the lights of cars The Press and wireless are continually harping on the subject of accidents, yet the dazzling is allowed to go on. Legislation was brought in a few years ago on the subject, but there is in existence to-day a more definite rule still. No lamp which conforms to the A.R.P. regulations offends in this way. Can nothing be done to secure the enforcement of this law? It cannot be doubted that it is dangerous for anyone to be half-blinded in the dark, especially if he is trying to drive a car. Or are we so divided up into water-tight compartments that one Ministry will not co-operate with another? Local magistrates and police officials seem to do nothing. It is a pity some of them do not have to drive at night!

Post-war Medicine

Dr. E. U. MACWILLIAM (Bexley, Kent) writes: Undoubtedly many of your readers are grateful to Dr. C. J. Gordon Taylor (December 20, p. 891) for so clearly setting forth the advantages to the public and the profession alike of an organized medical service. The disadvantages are less tangible but, I believe, none the less real. It would seem, therefore, that the next step along the present line would be to tabulate the disadvantages as has been done for the advantages. Perhaps Dr. Taylor or another correspondent similarly skilled might render this further service. Further, if "the problem in its essentials boils down to being largely a matter of finance" (as Dr. Taylor says it does), would it not be wise to bring pressure to bear upon the financial authorities with a view to the introduction of necessary adjustments, or do we regard modifications in our favour of the financial system as impossible as corresponding modifications of the solar system? Finally, if it is accepted that "we shall be driven into some form of organized service," would it not be worth while to be quite clear as to who, in this "democratic" country, is going to do the driving?

Increase of Tuberculosis

Dr. EDWARD E. PREST (Moffat) writes: It seems clear that as the complete eradication of tuberculosis becomes nearer, then the number of persons with a positive Mantoux reaction will become greatly reduced; it will thus become increasingly necessary to segregate carefully any infectious persons still remaining in the community.

Keeping Lice Away

Dr. T. T. APSIMON (Bradford-on-Avon, Wilts) writes: May I relate some experiences from the last war on the problem of lice and how to keep the battalion and its M.O. free from them. Decontamination centres were of little use: the lice reappeared in three days. Soaking shirts and underclothing in 2% lysol in saturated soap solution will keep lice away. The clothing should be thoroughly dried before being put on. The solution may be a little trying to some skins, but many men prefer it to being kept awake by lice. We had an excellent powder—Oxford powder; I believe its chief ingredient was cresol. I found that a pinch tipped down the back, front, and sides of the neck at night kept me free of lice. I got some distributed to the battalion companies, and the tins were used as furniture. Only by strenuous drilling and lecturing N.C.O.s and men while in billets can one get anti-louse powder distributed to men in the front line.